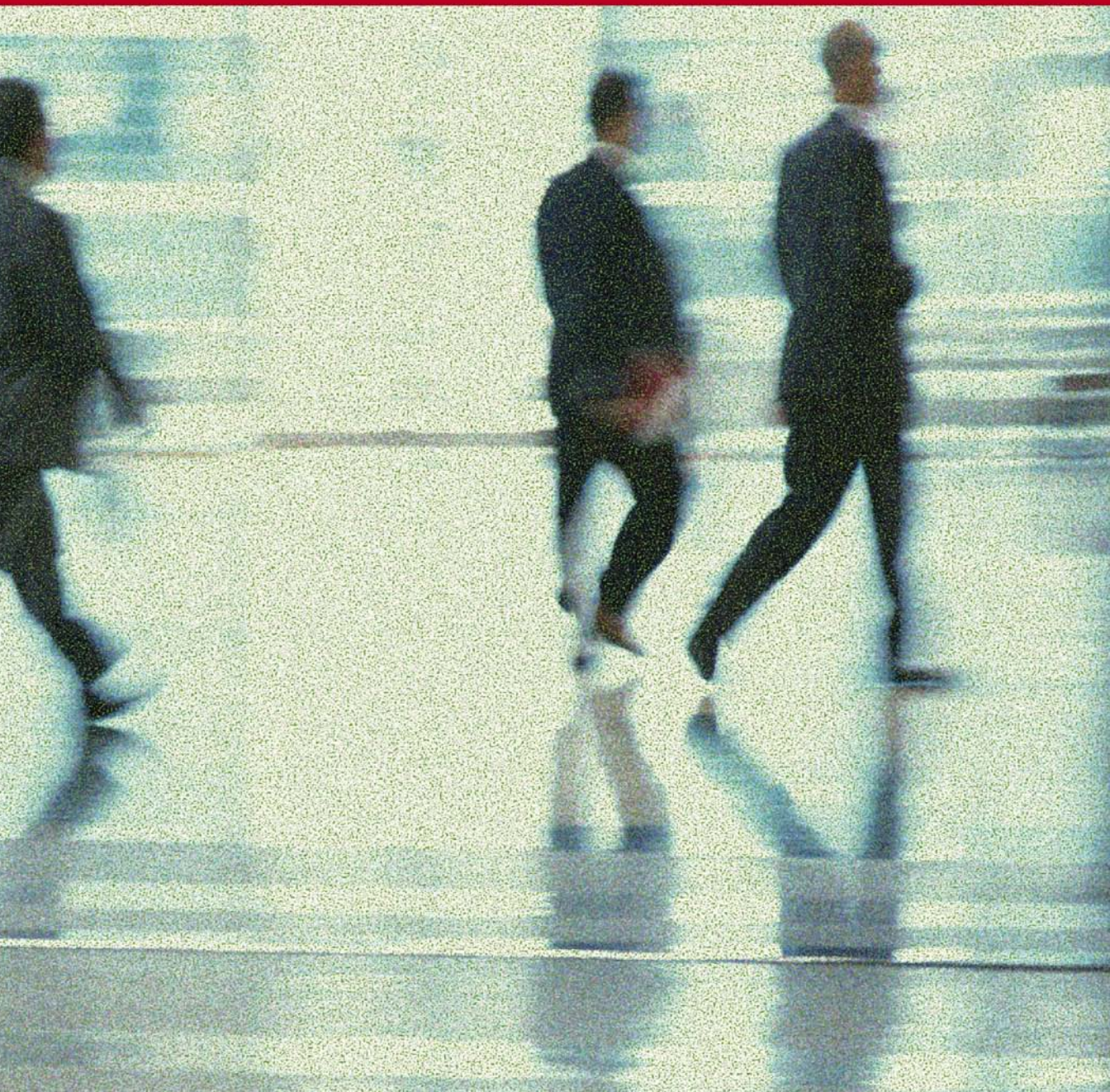
Tadpole M1400

USER GUIDE



Tadpole M1400 User Documentation

Complete, up to date user documentation can be downloaded at the following location:

ftp://ftp.tadpole.com/support/Tadpole_M1400/Manuals/

Contact Information for Technical Support

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Declaration of FCC, UL & CE Conformity

We, General Dynamics Itronix Corporation,
2941 Fairview Park Drive, Suite 100, Falls Church, VA 22042-4513, USA,
(509) 742-1598, declare under sole responsibility that the
product **Tadpole M1400 Thin Client Notebook** complies with
applicable FCC, UL, and CE directives.

FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

DOC Class B Notice

This digital apparatus does not exceed Class B limits for radio noise emission for a digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Shielded Cables

Connections between this system and peripherals must be made using shielded cables in order to maintain compliance with FCC radio frequency emission limits.

The connection of unshielded equipment interface cable to this equipment will invalidate the FCC Certification of this device and may cause interference levels that exceed the limits established by the FCC for this equipment. It is the responsibility of the user to obtain and use a shielded equipment interface cable with this device. If this equipment has more than one interface connector, do not leave cables connected to unused interfaces.

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Modifications

Modifications to this device not approved by General Dynamics Itronix Corporation may void the authority granted to the user by the FCC to operate this equipment.

Safety Precautions

WARNING

WARNING: Do not attempt to recharge alkaline or other non-rechargeable batteries with the Tadpole M1400 adapter/charger. Alkaline batteries cannot be recharged. Attempting to recharge alkaline batteries may cause personal injury and/or damage to the Tadpole M1400 Thin Client Notebook.

WARNING

WARNING: To prevent fire, shock hazard, or damage to the equipment, do not expose the Tadpole M1400 Thin Client notebook to rain or moisture. Do not immerse the Tadpole M1400 Thin Client notebook in water. If water has entered the Tadpole M1400 Thin Client notebook, do not use the Tadpole M1400 Thin Client notebook until it has been inspected by General Dynamics Itronix Corporation.

WARNING

WARNING: Do not dispose of the Tadpole M1400 batteries in fire. Disposal of the Tadpole M1400 batteries in fire may cause personal injury.

WARNING

WARNING: All service and upgrades to the Tadpole M1400 Thin Client notebook must be performed by a authorized technician only. Otherwise, you may encounter personal injury and/or damage your computer.

Battery Warning Instruction

WARNING

WARNING: Ensure any battery you use is compatible. Failure to do so may risk fire or explosion. For more details on purchasing compatible batteries, contact your Tadpole M1400 retailer.

WARNING

WARNING: Batteries should never be disposed of with household waste. Contact your local waste disposal or environmental agency for advice on disposing of used lithium-ion batteries.

Important Safety Instructions

The following instructions pertain to the risk of fire, electric shock, or bodily injury. Please read all of these instructions carefully.

1. Follow all of the instructions and warnings marked on the product or included in this manual.
2. Do not place this product on an unstable or unsupported surface.
3. The computer may fall, causing serious damage to the computer and others around.
4. Slots and openings in the product are for ventilation. To ensure reliable operation of the Tadpole M1400, and to protect it from overheating, these openings must not be blocked or covered. Do not use this computer on a bed, sofa, rug or other similar surface. This product should never be placed near an oven, a radiator, or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.
5. Never push objects of any kind into the Tadpole M1400 cabinet openings as they may touch dangerous voltage points or short out parts that could result in a fire or electrical shock. Keep liquids of any kind away from the computer.
6. This product should only be connected to the AC power source indicated on your product system's information label. If you are not sure of the type of AC power available, consult your dealer or local power company. Only connect the Tadpole M1400 to a power outlet matching the power requirements of this product.
8. Do not allow anything to rest on the power cord. Do not position this product where people will walk on the cord. If you have to use an extension cord with this product, make sure that the total amperage rating of all equipment plugged into it does not exceed the amperage rating of the extension cord. Make sure that the total of all equipment plugged into the main AC power outlet does not exceed 15 amps.
9. This product is equipped with a 3-wire grounded type plug.
10. Unplug your Tadpole M1400 from the main electrical power outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
11. Keep liquids of any kind away from the product.

Table of Contents

Tadpole M1400 User Documentation i
Contact Information for Technical Support ii
Copyright and Trademark Information iii
Disclaimer of Warranty Notice iv
Environmental Statement iv
Declaration of FCC, UL & CE Conformity v
FCC Compliance Statement v
DOC Class B Notice vi
Shielded Cables vi
Modifications vi
Safety Precautions vii
Battery Warning Instruction viii
Important Safety Instructions ix

Introduction 1
The Sun Ray Computing Model Components 2
The Thin Client Notebook Unit 2
The Sun Ray Server 2
An Interconnection Fabric 2

User Instructions 3
Tadpole M1400 Components 4
Thin Client Notebook Features 5
Using the AC Adapter 7
Unplugging the AC Adapter 7
Using the Battery 8
Installing the Battery 8

Charging the Battery 9
Checking Battery Status 9
Battery Performance 10
Removing a Battery 10
Maximizing Battery Life 10
Powering Up 11
Accessing the Tadpole M1400 Menu System 12
Restarting the Tadpole M1400 14
Shutting Down the Tadpole M1400 14
Integrated Keyboard 15
Special Keys 15
Modifier Keys 16
Cursor Control and Editing Keys 17
Common Keyboard Combinations 18
Notebook Buttons 19
The Touchpad 20
Configurable Options for the Touchpad 21
Disable Touchpad 21
Enable Tap Functions 22
Touchpad Vertical Scroll 22
Status Indicator LEDs 23
Accessing a Profile 25
Video Settings 25
Video Blanking 26
Connecting an External Display 28
Video Output 29
Screen Resolution 31
Virtual Screen Size 32

Example: Connecting an LCD Projector for Use with the Tadpole M1400 35
Using Smart Cards 36
Inserting a Smart Card 36
Removing a Smart Card 37

System Administrator 39
Network Profiles 40
Creating a New Profile 41
Editing a Profile 42
Defining a Startup Profile 43
Copying a Profile 47
Deleting a Profile 48
Securing a Profile 48
Profile Management 49
Profile Upload /Download Overview 50
Upload a Single Profile to the Server 51
Upload All Profiles to the Server 54
Download a Profile 55
Network Access Setup 58
Configuring and Connecting Using Ethernet 58
Default Ethernet Configuration DHCP 58
Ethernet: Configuring and Connecting a Static IP 59
Ethernet 802.1X 61
Configuring a Domain Name Service 64
Configuring and Connecting Using Wireless 66
Manual Wireless Configuration 67
Scan for Networks 72
Disable Wireless 76

Certificate Management 77
Connecting and Configuring Using Mobile Broadband 78
Summary of Network Access Procedures 82
Example 1: Ethernet connection to DHCP server 82
Example 2: Wireless connection to office network 82
Example 3: Wireless connection over VPN to office network 82
Example 4: Mobile Broadband connection over VPN to office network 82
Example 5: Wireless connection using the mini browser over VPN to office network 83
Example 6: Select from the available wireless access devices 83
Configuring VPN on the Tadpole M1400 84
Summary of Supported Features 84
Preparing for Configuration of VPN 85
Configuring the VPN 86
Security Network Login 102
Configuring the Mini Browser 106
Configuring a Homepage 108
Using the Mini Browser 109
System Password 110
Tadpole Parms 111
Servers Key 112
Select Key 113
Config Key 113
Profiles Key 113
Fwbase Key 113
Tadpole Thin Client Firmware Management 114
Overview 114
Firmware Management 115

TFTP 115
HTTP or FTP 116
Lock Configuration 116
Reset Configuration 117
Optional Features 117
Notes 118

Appendix and Licenses 119
Sun OSD Codes 120
Tadpole OSD Codes 123
3G Compatibility Chart 127
Software Licenses 129
Linux Real Mode Interface License 130
GNU GENERAL PUBLIC LICENSE 131
GNU GENERAL PUBLIC LICENSE - TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION 132
TIFF Library License 139

Index 141

Introduction

Welcome to the Tadpole M1400 User Guide.

The Tadpole M1400 is a high-resolution, wireless-enabled thin client notebook equivalent to that of the Sun Ray thin client manufactured by Sun Microsystems.

The Sun Ray Computing Model Components

The Thin Client Notebook Unit

The Tadpole M1400 is an example of a thin client notebook. The thin client is a stateless device through which users can access data and applications that reside on a secure server. No data is stored on the thin client.

The Sun Ray Server

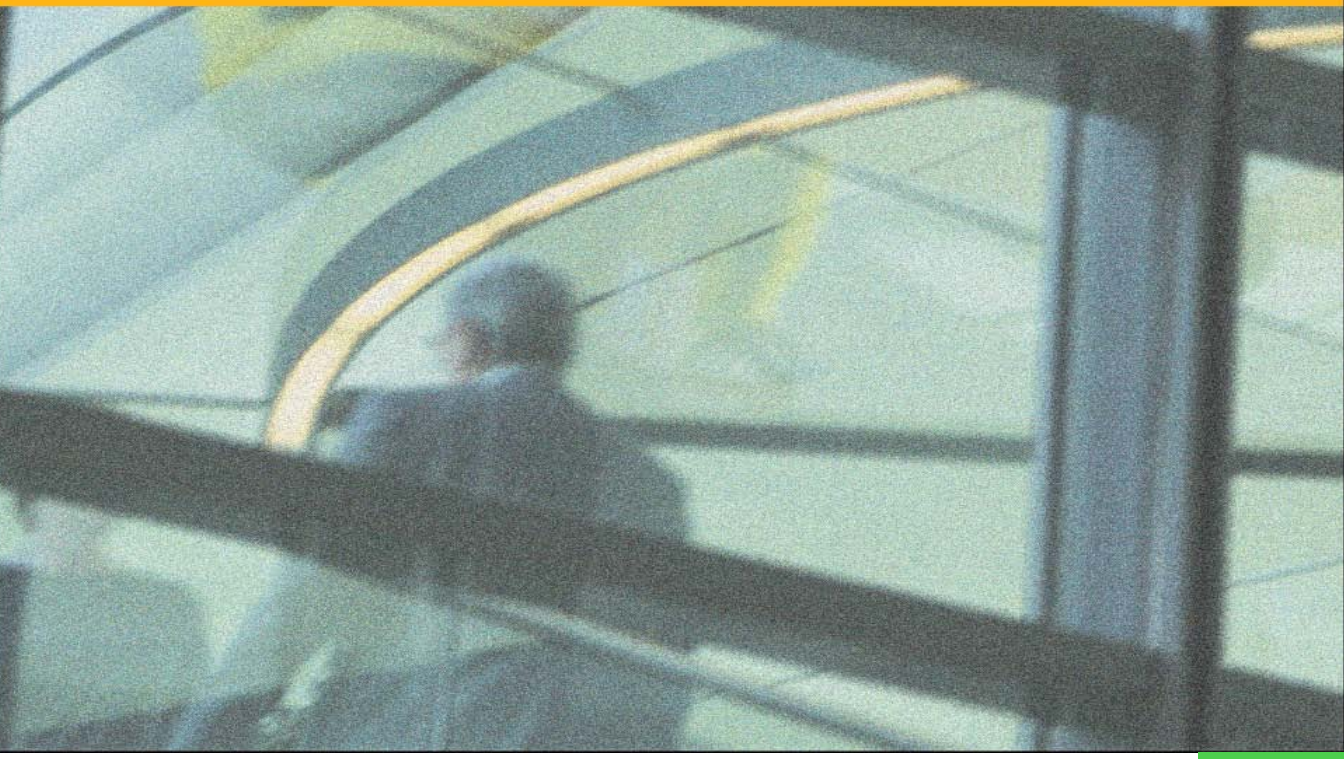
With the release of the Sun Ray Server Software 3.0, Sun Ray Servers can be Solaris or Linux based. The Sun Ray Server manages user authentication and user sessions that are accessed via thin clients. User sessions, data, and applications reside on the server. Multiple servers can be configured for fail over, back ups, and load balancing. Sun Ray Server Software 4.0 and above is recommended for the Tadpole M1400 Thin Client notebook. However, all models are supported on version 3.1 of Sun Ray Server Software.

An Interconnection Fabric

The interconnection fabric is comprised of the network components that connect the thin clients to the server. The Tadpole M1400 has a 10/100 Ethernet port as well as a built in wireless card for wireless connections. In addition, the Tadpole M1400 supports a number of mobile broadband devices via the Express card/54 slot or USB ports. (Optional configuration, dependent on locality. Devices not bundled as standard.) For a list of the supported devices, see

ftp://ftp.tadpole.com/support/Tadpole_M1400/Manuals/3G_devices.pdf

User Instructions



The Tadpole M1400 also supports a virtual private network (VPN) which supports features to allow communication across the network that is secured through authentication and encryption. A list of these is available in the section titled Configuring VPN on the Tadpole M1400.

This section provides basic user instructions for operating the Tadpole M1400 Thin Client Notebook.

Tadpole M1400 Components

As you unpack your Tadpole M1400, check the shipping carton and the components inside it for damage.

Figure 1. Tadpole M1400 Notebook and Smart Card

If the shipping carton is damaged or the Tadpole M1400 components are missing or damaged, please contact your shipper or dealer immediately.

Each shipping carton contains the following items:

- Tadpole M1400 Thin Client Notebook
- AC adapter and power cord (not pictured)
- Rechargeable battery (not pictured)
- Smart card
- This User Guide

Thin Client Notebook Features

This section identifies the hardware components of the Tadpole M1400 Thin Client Notebook.

Figure 2. Tadpole M1400, Back

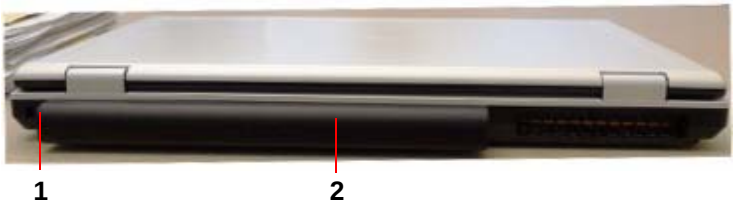


Table 1. Front Panel Items	
1	Kensington lock
2	Battery

Figure 3. Tadpole M1400, Front

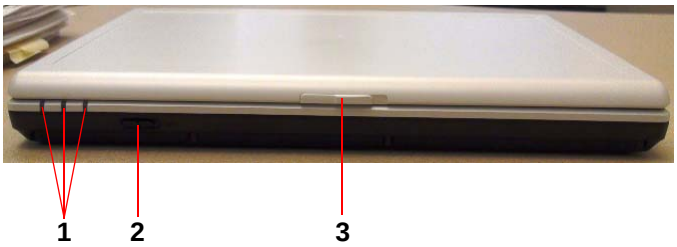


Table 2. Front Panel Items	
1	LED indicators
2	Wireless switch
3	Cover latch

Figure 4. Tadpole M1400, Left Side

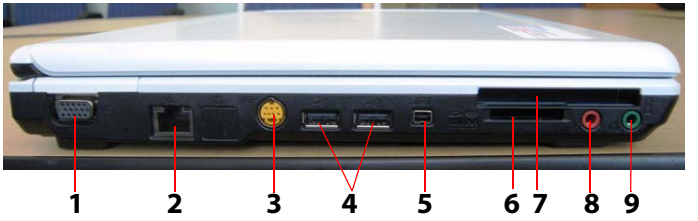


Table 3. Left Side Items	
1	VGA connection
2	Ethernet port
3	S-video out port (reserved for future expansion)
4	Powered USB ports
5	Firewire (reserved for future expansion)
6	Multiple digital media slot (reserved for future expansion)
7	Express card slot
8	Microphone/Audio-in
9	Headphones/Audio-out

Figure 5. Tadpole M1400, Right Side

Table 4. Right Side Items	
1	Smart Card slot
2	USB ports
3	AC connector

Using the AC Adapter

To power the Tadpole M1400 from AC power:

1. Locate the Tadpole M1400 near an AC outlet.
2. Plug the AC adapter into the AC connector of the Tadpole M1400.
3. Plug the AC cable plug into a nearby AC outlet.

Unplugging the AC Adapter

Unplug the AC cable from the AC outlet. Then disconnect the AC adapter from the Tadpole M1400.

Using the Battery

Figure 6. Notebook, 9-cell Battery, and Adapter

NOTE: A 6-cell battery is also available for the Tadpole M1400 system.

Installing the Battery

1. Slide the battery into the bay.
2. Press gently but firmly until the latch locks it into place.
3. Move the battery lock switch (marked with a "1") to the left to lock into position.

Charging the Battery

The battery must be charged before the first use. A completely discharged battery takes 2 to 4 hours to charge (depending on whether the Tadpole M1400 is on or off).

1. Connect the AC power adapter to the notebook and then to the electrical outlet. Allow the battery to fully charge. The Battery status LED blinks blue when charging and displays solid blue when fully charged. (See Table 5.)
2. Once a battery pack is fully charged for the first time, use your Tadpole M1400 on battery power until the battery discharges completely. This will extend battery life and help ensure accurate monitoring of battery capacity.

NOTE: The battery will automatically charge whenever your Tadpole M1400 is connected to an electrical outlet. You can leave the battery in your Tadpole M1400 as long as you like since its internal circuitry prevents it from overcharging

NOTE: The battery will not charge if it or your Tadpole M1400 is too hot, either from use or being in a hot environment. If this occurs, the battery status LED will blink amber. Disconnect your Tadpole M1400 from any electrical outlet and allow it to cool to room temperature before attempting to charge the battery.

Checking Battery Status

Table 5. Battery Status LED

Battery Status	LED Indicator
Charging	Blinks blue
Fully Charged	Solid blue
Discharging	Off
Critical Low	Blinks amber; Approximately 10–15 minutes left (dependant on operating environment)

Battery Performance

The performance of the battery can vary, depending on operating conditions. Your battery may last less time if you are using PC Cards, USB devices or have high display-brightness settings.

Removing a Battery

To remove the battery from the Tadpole M1400, follow these steps:

1. Shutdown the Tadpole M1400 according to the instructions on page 14.
2. Disconnect the AC power cord if necessary.
3. Turn the notebook over to disconnect the battery from the battery bay.
4. Move the battery lock switch to the right (unlock position).
5. Slide and hold the battery release latch.
6. Remove the battery.

Maximizing Battery Life

A battery can be recharged many times, but over time it will lose its ability to hold a charge. To maximize battery life:

- If storing your Tadpole M1400 for an extended period of time, remove the battery. Do not store a fully charged battery: charge it to 25%-50% of it's capacity, then store. Fully charge the battery before using your Tadpole M1400 again.
- If you have a spare battery pack, alternate the batteries.
- Ensure your Tadpole M1400 is off when replacing the battery.
- Store spare battery packs in a cool, dry place, and out of direct sunlight.

Powering Up

This section discusses the steps for powering up the system.

1. Verify that either battery power or AC power is available to the system.
2. Open the display cover by moving the latch to the right and lifting.
3. The power button for the Tadpole M1400 is centered above the keyboard. Press the power button to turn on the system. See Figure 7.

Figure 7. Tadpole M1400 Power Button

4. View the initial system screens. After approximately 6 seconds the LCD monitor will momentarily display a light blue screen, followed by a cyan colored screen. After 12 seconds the LCD backlight cycles and then the first OSD (On-Screen Display) displays on the screen, indicating that the Tadpole M1400 has successfully completed it's power-on self tests.
5. The Tadpole M1400 is now ready to be configured for connection to your network. (See "Network Access Setup' on page -58".)

NOTE: By default the Tadpole M1400 will connect via a wired Ethernet connection to a Sun Ray server running DHCP.

Accessing the Tadpole M1400 Menu System

Follow these 3 steps to access the Tadpole M1400 menu system.

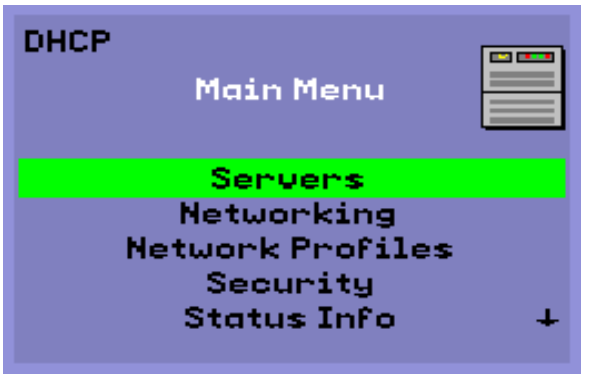
NOTE: The MENU key is to the right of the spacebar.

NOTE: The cursor must be located inside the On Screen Display (OSD) window to enable any of the menu items to be selected.

It is also possible to move the OSD window by dragging the window to a new position using the touchpad or an attached USB mouse.

1. Turn on the Tadpole M1400.
2. Press **[Menu-M]**.
3. The main menu will come up in the OSD as shown below. To navigate the main menu use the **[up/down/left/right arrow]** to highlight the appropriate menu. When highlighted, press **[Enter]** to select.

Figure 8. Main Menu



In addition to the main menu items shown above, use the menu key to access the following menus:

[Menu-A] Soft reset of the client firmware. The system will power cycle and restart.

[Menu-B] Mini-browser

[Menu-I] Status menu; displays firmware version, as well as radio status, power status, and IPSec status

[Menu-K] Access to Keyboard and Mouse menu for configuration options

[Menu-L] Displays license information

[Menu-P] Lists configured profiles and enables selection for use

[Menu-M] Main Menu

[Menu-N] Network information

[Menu-S] Access to video settings menu for configuration of the video settings and screen resolution

[Menu-V] Version of firmware

[Esc] Exits the previous menu

Restarting the Tadpole M1400

Restart a Tadpole M1400 that has been halted and powered down with the following steps:

1. Press **[Menu -A]** to perform a soft-reset of the client firmware. The system will power cycle and restart.
2. If using a 3G device, insert it in the Tadpole M1400 and turn it on before powering up the Tadpole M1400.
3. Power up the system.

Shutting Down the Tadpole M1400

There are two ways to shut down the Tadpole M1400:

- Press the power button located above the keyboard; or
- Close the display lid. The Tadpole M1400 is configured by default to power down when the lid is closed after one minute.

Integrated Keyboard

The Tadpole M1400 Thin Client Notebook features a keyboard which includes a numeric keypad and a full array of special function keys. See Figure 9.

Figure 9. Tadpole M1400 Keyboard

This section covers the Tadpole M1400 keyboard and identifies several keys that are commonly used when working with the operating system.

Special Keys

- **[Esc]**: Press the **[Esc]** key to cancel any specific command that has just been keyed in.
- **[Enter]**: Press the **[Enter]** key to position the blinking cursor at the beginning of the next line on the display screen.
- **[Prt Sc/Sys Rq]**: Press the **[Prt Sc/Sys Rq]** key to print whatever is on the screen at the time. Note that in some software programs, this key may be used in conjunction with other keys for other specific functions. Consult the software user manual for more information.

- **[Num Lock]**: Press the **[Num Lock]** key to enable/disable the numeric keys on the right hand side of the keyboard. The number lock LED will illuminate when number lock is enabled.
- **[Caps Lock]**: Press the **[Caps Lock]** key to type letters in upper case. The number keys and function keys are not affected. The caps lock LED will illuminate when caps lock is enabled.
- **[Shift]**: Press the **[Shift]** key in conjunction with a letter key to type the letter in upper case. Note that in some software programs, this key may be used in conjunction with other keys for other specific functions.

Modifier Keys

The following modifier keys only function when used in conjunction with other keys.

- **[Fn]**: Press the **[Fn]** key to engage the alternate function (labeled in blue) on selected keys. For example, simultaneously pressing the **[Fn]** + **[Dn Arrow]** keys decreases the speaker volume
- **[Ctrl]**: The **[Ctrl]** key is used in conjunction with other keys in your software program to perform specific functions. Refer to the software user's manual for details on how the **[Ctrl]** key functions.
- **[Menu]**: The **[Menu]** key is located between the **[Alt]** key and the **[Ctrl]** key on the right side of the space bar. Use it as a shortcut to access specific menus. See page-13.
- **[Alt]**: The **[Alt]** key is used by your software program to perform specific functions. Refer to the software user's guide for more details on how to use the **[Alt]** key.

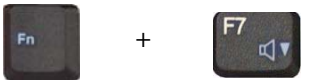
Cursor Control and Editing Keys

The keys listed in this section are specifically used to move the cursor on the display. When used in combination with other keys, these cursor control keys provide some editing functions. Refer to the specific software manual for details on how to use these keys.

- **Left/Right Arrow Keys**: Press either of these keys to move the cursor one character at a time in the direction shown on the arrow key.
- **Up/Down Arrow Keys**: Press either of these keys to move the cursor one line at a time in the direction shown on the arrow key.
- **[PgUp] or [PgDn]**: When used with the **[Fn]** key, the **[PgUp]** and **[PgDn]** keys allows the cursor to move page by page, or window by window, depending on the software.
- **[Home]**: The **[Home]** keys moves the cursor to the beginning of a document or the beginning of a line, depending on the software.
- **[End]**: The **[End]** key moves the cursor to the end of a line or to the end of a document, depending on the software application.
- **[Insert]**: The **[Insert]** key enables the user to insert characters within the text while interacting with the OS. In some applications, **[Insert]** is a toggle key, alternating between character insert and character overtype.
- **[Delete]**: The **[Delete]** key is used to edit text at either the operating system command prompt or the text within a document. Press the **[Delete]** key to remove any characters to the right of the cursor and then pull the remaining typed characters from the right.
- **[BackSpace]**: While within a document, the **[BackSpace]** key moves the cursor to the left and simultaneously erases characters in its path.

Common Keyboard Combinations

The function keys F4, F5, F6, F7, and F8 at the top of the keyboard perform various operations with respect to the operating system and software in use. The following table lists these special functions.

Key Combinations	Definitions
	Decrease display brightness
	Increase display brightness
	Mute audio volume
	Decrease audio volume
	Increase audio volume

NOTE: Function keys F1, F2, F3, F9, F10, F11, and F12 are not mapped on the Tadpole M1400 to perform special functions.

Notebook Buttons

The Tadpole M1400 Thin Client Notebook contains additional shortcut buttons located above the keyboard. Table 6 lists and describes the function of each.

Figure 10. Notebook Buttons

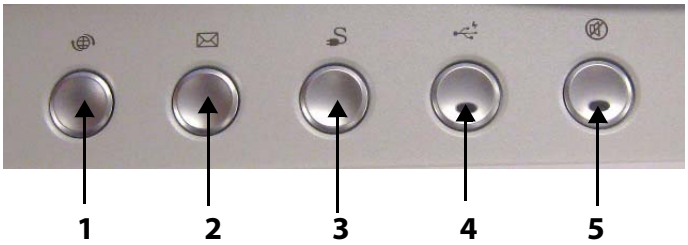


Table 6. Tadpole M1400 Buttons	
Button	**Function**
1. Internet Access	Non-functional
2. E-mail	Non-functional
3. Fast-charge Battery	Non-functional
4. USB	Press to charge the devices connected to the left hand USB ports. An illuminated LED indicates that the unit is not powered on.
5. Sound	Press to mute volume. LED indicator is non-functional.

The Touchpad

The Tadpole M1400 touch pad is a touch-sensitive pointing device located below the keyboard. See Figure 11.

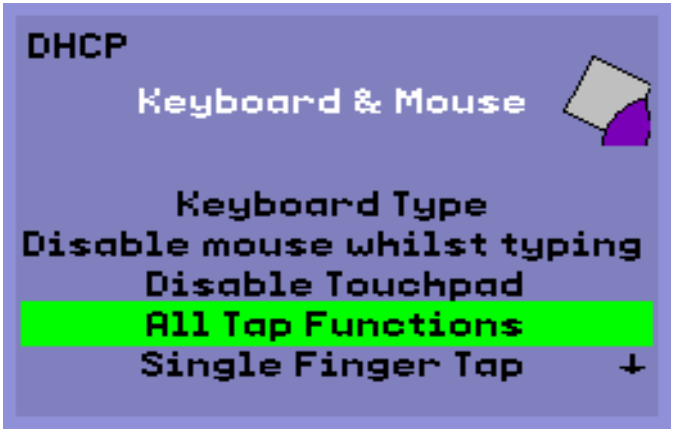
Figure 11. Tadpole M1400 Power Button

The touch pad buttons have essentially the same function as mouse buttons. Clicking these buttons makes selections, drags objects, or performs a variety of other functions depending on the software.

Configurable Options for the Touchpad

The functionality of the touchpad is configurable through the Keyboard and Mouse menu. To access this menu, select **Advanced** from the **Main Menu**. From the **Advanced Menu**, scroll down to select **Keyboard and Mouse**, and press **[Enter]**. See Figure 12.

Figure 12. Keyboard and Mouse Menu



NOTE: Continue scrolling down to access additional Keyboard and Mouse menu options.

Disable Touchpad

This allows the touchpad to be disabled when an external pointing device is connected. Select yes or no for this option. Scroll to the **Disable Touchpad** menu option, press **[Enter]**, and select **Yes** to disable the touchpad when an external pointing device is connected. The default setting is **No**.

Enable Tap Functions

Select one of the following to configure the tap settings for the touchpad:

- **All Tap Functions**: Select **Enable** to enable single, two and three finger tap functionality. Select **Disable** to turn off all tap functionality.

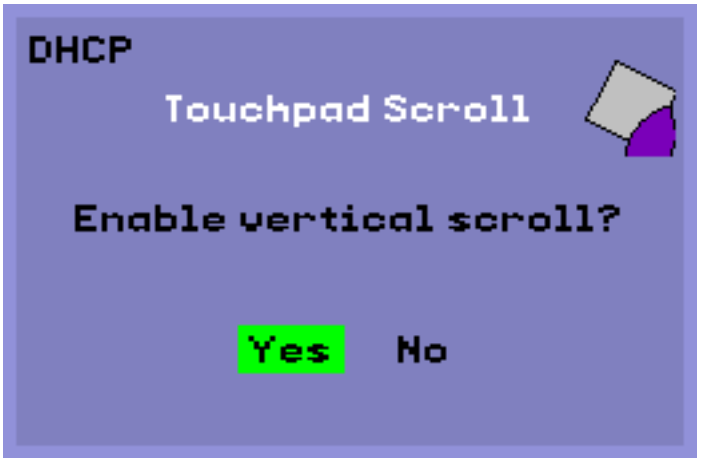
NOTE: Disable is the default setting.

- **Single Finger Tap**: Emulates left mouse button function.
- **Two Finger Tap**: Emulates middle mouse button function.
- **Three Finger Tap**: Emulates the right mouse button function.

Touchpad Vertical Scroll

This option allows configuration of the right-hand side of touchpad (finger width) to act as a vertical scroll. From the **Keyboard** and **Mouse** Menu, select **Touchpad Vertical Scroll**, press **[Enter]** and then select **Yes** to enable as shown in Figure 13. This feature is disabled by default.

Figure 13. Touchpad Vertical Scroll



Status Indicator LEDs

The Tadpole M1400 has two sets of status indicating LED lights. These LEDs are located above and below the keyboard, as shown in Figure 14.

Figure 14. Tadpole M1400 Status Indicator LEDs

The LED indicators located above the keyboard display status related to the keyboard functions. See Figure 15 and Table 7.

Figure 15. Keyboard LEDs

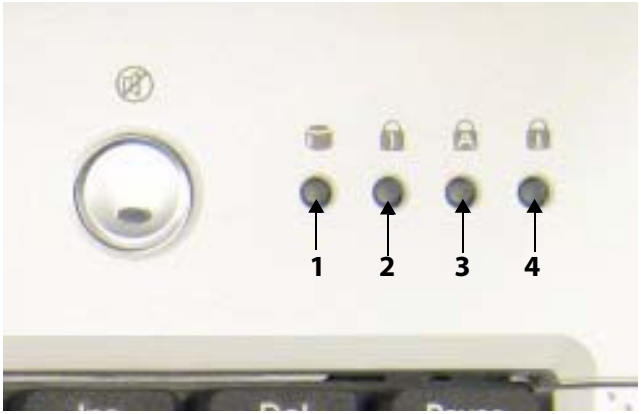


Table 7. Keyboard LEDs	
LED	**Function**
1. Hard Disk-drive	Non-functional
2. Number Lock	Indicates that number lock is on when lit
3. Caps Lock	Indicates that caps lock is on when lit
4. Scroll Lock	Indicates that scroll lock is on when lit

The LED indicators on the bottom left corner of the notebook display power, battery, and wireless status. See Figure 16 and Table 8.

Figure 16. Notebook LEDs

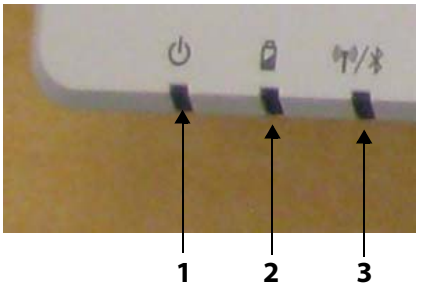


Table 8. Notebook LEDs	
LED	**Function**
1. Power	Indicates that power from the main source or from the battery is being supplied to the notebook when lit
2. Battery	Indicates battery state as fully charged (blue), charging (blinking blue), discharging (off), or low (blinking amber). See also Table 5.
3. Wireless	Indicates wireless device activity. Blinks blue when scanning, solid blue when connected. If not lit, wireless is in the off.

Accessing a Profile

Upon completion of the Tadpole M1400 initialization and the display of the first OSD screen, perform the following steps to access a profile:

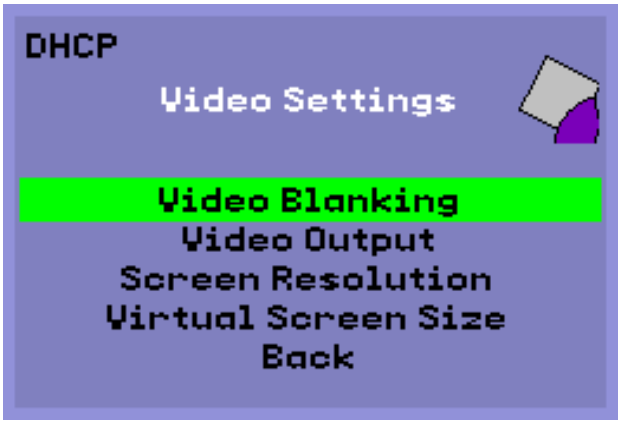
1. Click **[Menu-P]** for a list of configured profiles.
2. Use the arrow keys to select a profile and press **[Enter]**.
3. The Tadpole M1400 will automatically reset and restart using the profile chosen.

NOTE: If the Tadpole M1400 detects an Ethernet cable, it will default to use the wired Ethernet connection. Remove the cable to connect via wireless or a mobile broadband device.

Video Settings

To access the **Video Settings** menu, use the **[Menu-S]** shortcut or select **Video Settings** from the **Advanced Menu**. See Figure 17.

Figure 17. Video Settings Menu



Video Blanking

This video setting configuration option allows the user to override the video blanking (video power saving) options from the host. It will place the video output into power saving mode after the specified time-out regardless of screen saver settings.

1. Select **Video Blanking** from the **Video Settings** menu and press **[Enter]**. See Figure 17.
2. The prompt "Override video blanking timeout?" will appear. See Figure 18.
   - Select **Yes** to specify a timeout value and continue with Step 3.
   - Select **No** to leave video blanking settings under host control.

Figure 18. Video Blanking Screen

3. At the prompt, enter the timeout value in minutes. (See Figure 19.) A value of 0 (zero) means the video will never enter power saving mode.

Figure 19. Video Blanking Set Timeout

4. In the following screen, select **OK** to confirm the timeout value entered.

Connecting an External Display

Overview:

When an external device is connected to the Tadpole M1400, the default behavior is to set the default session size to match the resolution of whichever display is larger: the internal LCD or the external display. This should be adequate for most uses. For example, connecting an external 1920x1200 LCD screen will result in a default session size of 1920x1200; whereas, attaching a projector with a resolution of 1024x768 will result in a default session size of 1280x800 (the resolution of the internal LCD). See below for more information on connecting projectors.

If this behavior is not desired, it is generally best to set the default policy on the SunRay server. This can be client specific (via MAC address) or token specific (via smart card). Please refer to the SunRay user guide and **`utresadm`** and **`utresdef`** commands in particular.

As an alternative, the Tadpole **Video Settings** menus can be used to set the default policy for the unit. However, this will only affect new sessions, and the policy set on the SunRay server takes precedence. If a session is active, it will need to be terminated and a new session initiated in order for any changes in these menus to become active.

Video Output

The Video Output menu allows the user to specify which output to use, as described in the following steps:

1. Highlight **Video Output** in the **Video Settings** menu and press **[Enter]**.
2. Figure 20 shows video output modes available for the Tadpole M1400. Use the arrow keys to make a selection and press **[Enter]**.

Figure 20. Video Output Menu

NOTE: The Tadpole M1400 operates in a fail-safe mode. Should video output be directed where there is no monitor plugged in, it will attempt to fall back to a working monitor. When a monitor is plugged into a Tadpole M1400, the system will attempt to dynamically direct video output as configured.

a. **Dual Head Mode**: The monitors are treated as one large screen. When the M1400 has an external monitor attached, the SunRay Server is aware there are two monitors and will control them separately in a mode compatible with a SunRay2 with dual heads. SunRay server commands (such as /opt/SUNWut/bin/utset) can be used to control the resolution of each individual monitor.

Dynamically attaching a monitor when configured for "Dual Head

Mode" will mirror the monitors until the M1400 is restarted. Press **[Menu-A]** to restart, at which point the SunRay Server will detect the monitor configuration and treat each monitor as a separate entity. This is a restriction of the SunRay Server software.

b. **Mirror Smallest/Largest: The** monitors are mirrored. When set on Mirror Largest, if the monitors are different sizes, the smaller will pan to the size of the larger. The SunRay server does not recognize when two monitors operating in a mirrored mode, since commands to change resolutions (such as utset and utsettings) effect both monitors identically.

c. **VGA 1**: This is external video output for the Tadpole M1400. Video output will be directed to the external monitor, assuming one is attached, otherwise it will remain on the internal panel. Dynamically connecting a monitor to the external port will direct the video to the external monitor and place the internal panel into power saving mode. Disconnecting the monitor will re-direct video output to the internal panel.

d. **LVDS 1**: This is the internal panel on the Tadpole M1400. When a monitor is dynamically plugged into the external port, the external monitor mirrors the size of the internal panel. Restart the Tadpole M1400 with an external monitor with LVDS selected to keep the video output directed to the internal panel only.

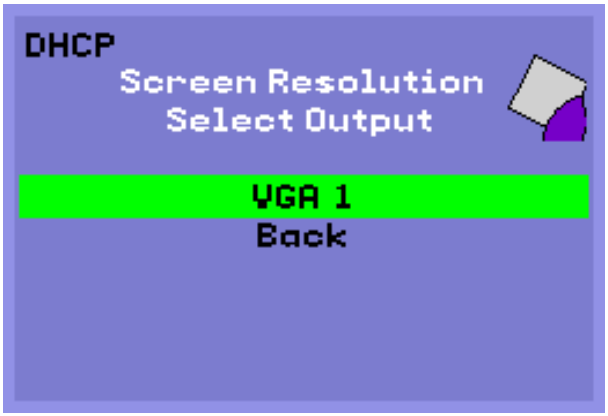
Screen Resolution

Use the **Screen Resolution** menu to use another supported resolution or to set the resolution for the external display in cases where the external device is not auto-detected and automatically switched to output the largest supported resolution (mirror largest).

To adjust the resolution:

1. Go to the **Video Settings** menu and select **Screen Resolution**. See Figure 21.
2. In the **Screen Resolution** menu, scroll down to select from the output at which the external display device should operate.

Figure 21. Screen Resolution Menu (1 of 2)



3. Enter the resolution and frequency values. Press **[Enter]** and select **OK** to accept changes.

Figure 22. Screen Resolution Menu (2 of 2)

Virtual Screen Size

The Tadpole M1400 has three sets of dimensions (width x height) relating to screens and video:

- The **Physical Size** is the size in pixels of the highest resolution supported by the monitor, and used to set maximum buffer sizes. When an external monitor is attached, the physical size is set to the largest display.
- The **Logical Size** is the size of the X windows desktop size, and can be either smaller or larger than the physical size. A newly created X session will have the logical size the same as the physical size. When the logical size is greater than the physical size (as can happen when moving a SunRay session between to different desktop units), the SunRay server will be responsible for panning around the physical size.

- The **Virtual Screen Size** is never smaller than the physical size. This is the size which is sent to the SunRay Server as its physical size, and is then used to set the maximum buffer size rather than the physical screen size.

NOTE: The virtual screen size is typically set to the size of an attached external monitor. This prevents the SunRay Server from performing any panning operations and instead pans within the Tadpole M1400, which is more efficient and smoother. Subsequently, any X sessions created will be the size of the monitor regardless of whether the monitor is attached. When the monitor is attached, the desktop will already be sized to the highest resolution possible for the monitor.

Use the following steps to set Virtual Screen Size:

1. Select **Virtual Screen Size** from the **Video Settings** menu.
2. In the **Virtual Screen Size** window (see Figure 23 and Figure 24), fill in the size as width x height and press **[Enter]**

Figure 23. Virtual Screen Size Window (1 of 2)

Figure 24. Virtual Screen Size Window (2 of 2)

3. A confirmation message will appear with the values entered (see Figure 25), select **OK** and press **[Enter]**.

Figure 25. Virtual Screen Size Confirmation

4. After accepting the changes, restart the M1400 and also the Sun Ray session.

Example: Connecting an LCD Projector for Use with the Tadpole M1400

1. Connect the LCD projector to the M1400 and power-up the projector.
2. Power on the Tadpole M1400.

By default the M1400 will mirror the resolution of the largest display device connected. For a large number of projectors which do not support WXGA, the image output to the projector and Tadpole M1400 will mirror that of the Tadpole M1400 LCD @ 1280x800. Go to Step 3 to modify.

3. Press **[Menu-S]** and select **Video Output**, and then select **Mirror Smallest**.

   Depending on the configuration of your SunRay server session, you may need to restart your session. At the login prompt, press **[Crtl-Alt-Backspace-Backpsace]** twice in quick succession. You may need to repeat the key sequence several times to kill the session and initiate a re-start.

NOTE: The key sequence kills the active session and you will lose any data that has not been saved.

   The screen will momentarily go black before restarting your session and providing a login screen at the correct resolution. If the resolution is incorrect, go to Step 4.

4. Press **[Menu-S]**, then select **Screen Resolution** and enter the desired resolution at which the device operates (e.g. 1024x768@60). Press **OK** to accept the changes and then restart the Tadpole M1400 and the Sun Ray session.

   Depending on the configuration of your SunRay server session, you may need to restart your session. At the login prompt, press **[Crtl-Alt-Backspace-Backpsace]** twice in quick succession. You may need to repeat the key sequence several times to kill the session and initiate a re-start.

NOTE: The key sequence kills the active session and you will lose any data that has not been saved.

The screen will momentarily go black before restarting your session and providing a login screen at the correct resolution.

Using Smart Cards

Your Tadpole M1400 Thin Client notebook uses Smart Cards for user identification and authentication.

Inserting a Smart Card

Insert a Smart Card using the following steps:

1. Locate the Smart card slot on the right side of the Tadpole M1400 as shown in the illustration.
2. Hold the Smart card with the chip side up.
3. Carefully slide the card into the socket.
4. If you encounter too much resistance, do not force the card. Check the card orientation and try again.

Figure 26. Inserting a Smart Card

Removing a Smart Card

Refer to Figure 27 and the following instructions for removing a Smart Card:

1. Grasp the exposed edge of the Smart Card.
2. Pull out as shown to remove.

Figure 27. Removing a Smart Card

System Administrator

This section provides instruction for configuring and connecting the Tadpole M1400 Thin Client Notebook to the network using an Ethernet connection, wireless connection, or mobile broadband connection.

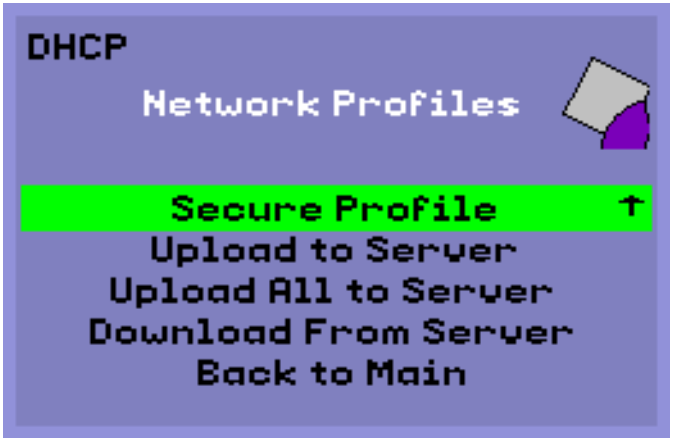
Network Profiles

A profile is necessary to access the network server. Each profile can be configured to attach to both a wired network and a wireless or mobile broadband network. As a default, the Tadpole M1400 will connect to the Ethernet configured profile; if the Ethernet cable is not present, it will connect via the wireless or mobile broadband network.

The **Network Profiles** menu is accessible through the **Main Menu.** See Figure 28 and Figure 29.

Figure 28. Network Profiles Menu (1 of 2)

Figure 29. Network Profiles Menu (2 of 2)



Creating a New Profile

1. In the **Network Profiles** menu, select **New Profile** and press **[Enter]**.

Figure 30. Network Profiles Menu

2. Enter a new Network Profile name. This can contain up to 32 characters.

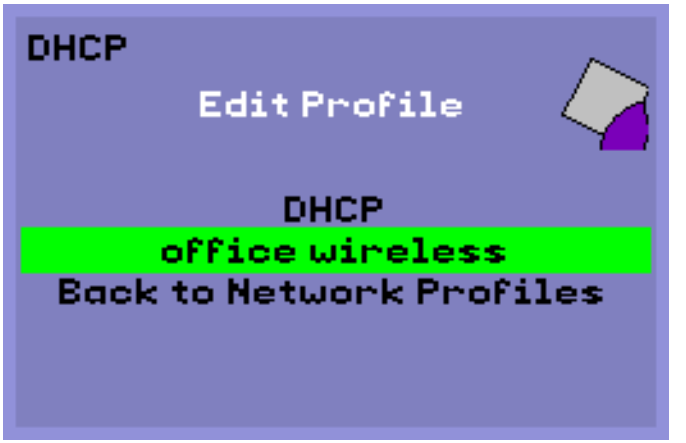
Figure 31. New Profile Screen

3. Press **[Enter]** to save the new profile.

Editing a Profile

1. To configure the new profile or modify an existing one, select **Edit Profile** from the **Network Profiles** menu, then select the profile name.

Figure 32. Edit Profile Menu



2. Configure the network profile in accordance with your network setup.

See sections regarding configuring the Tadpole M1400 Thin Client Notebook for connection over Ethernet (page-58), wireless (page-66), and mobile broadband (page-78).

Defining a Startup Profile

1. To define the profile the unit uses each time it is started, select **Startup Profiles** from the **Network Profiles** menu and select the network profile required.

   It possible to configure this startup or "default" profile as follows:

   a. For the profile to always start up when the unit is reset or turned on, select **No** at the **Profile Menu at Startup** menu. See Figure 33.

Figure 33. Profile Menu at Startup Menu (1 of 3)

Go to Step 2.

b. To be prompted to confirm the selection of a default profile each time the client is started, select **Yes** at the **Profile Menu at Startup** menu. See Figure 34.

Figure 34. Profile Menu at Startup Menu (2 of 3)

The "default" profile highlighted in the OSD will be used upon restart. The user must press the **[Enter]** key to allow the profile to initialize.

Go to Step 2.

c. The **With Timeout** option allows the user to delay the profile startup for up to 30 seconds before the profile is automatically started. During this delay an alternate profile can be selected. See Figure 35.

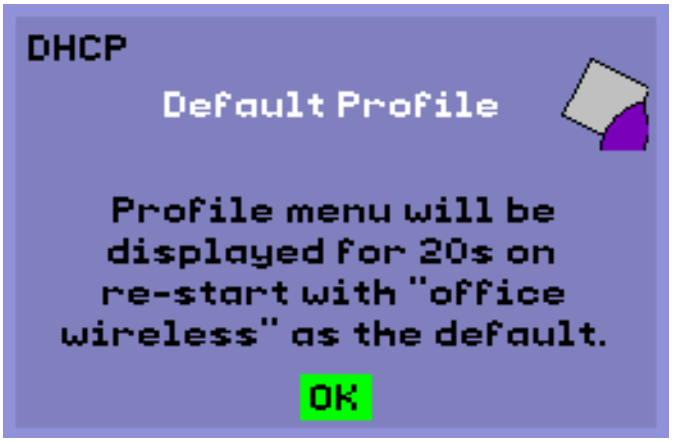
Figure 35. Profile Menu at Startup Menu (3 of 3)

d. Enter the number of seconds (1–30) for the delay.

Figure 36. Profile Menu Timeout (1 of 2)

e. Press **[Enter]** to confirm the configuration.

Figure 37. Profile Menu Timeout (2 of 2)



A summary of the options for the default profile configuration is listed in Table 9.

Table 9. Summary of Options for Default Profile Configuration	
No	Always uses the “default” profile. No timeout.
Yes	Infinite timeout. Requires user to agree to the highlighted “default” profile selection. Enter key must be pressed.
WIth Timeout	Sets the “default'” profile with a 0–30 second delay.

NOTE: Only one profile can be configured as the “default” profile. The last profile modified using the startup profile menu becomes the “default” profile.

2. For changes to take effect, the Tadpole M1400 Thin Client Notebook must be re-initialized. Press **[Menu-A**] to reset/reboot the notebook.

Copying a Profile

1. Select **Copy a Profile** from the **Network Profiles** menu. Select the profile you wish to copy and then insert a new name.

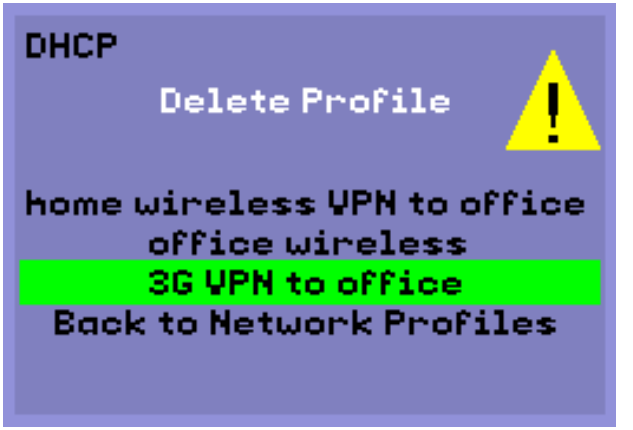
Figure 38. Copy Profile Screen

2. Press **[Enter]** to save the newly created profile.

Deleting a Profile

Select **Delete Profile** from the **Network Profiles** menu. Select the profile you wish to delete and then press **[Enter]**.

Figure 39. Delete Profile Screen



NOTE: The active profile, which is displayed at the top left corner of the OSD window, cannot be deleted.

Securing a Profile

Each profile can be locked against upload or download or both by assigning a security password to the profile. By default the profile is unlocked.

The purpose of this feature is to secure any given profile from being uploaded onto another Sun Ray firmware server and an existing profile being downloaded onto another Tadpole M1400 system. To upload or download the profile, the security password must be known.

In some instances users will require access to a profile to add their own configuration for a given profile, such as a home wireless configuration. The VPN configuration maybe pre-defined by the administrator to protect sensitive information (such as the pre-shared key being shared with the user—once the pre-shared key is entered it's no longer displayed in plain text) while allowing the profile to still be edited by the user. If profile is locked for both upload and download, the amended profile can not be uploaded to the firmware server nor can the default profile be downloaded to the Tadpole M1400 when the system connects to the server, ensuring that the user's home wireless configuration remains in place.

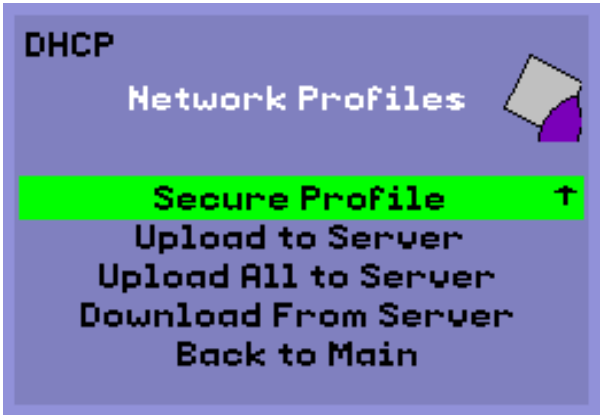
Profile Management

It is possible upon the creation of a single or complete set of multiple "profiles" on a Tadpole M1400 to upload the "master" profile configuration to a firmware server in order to propagate the configuration to all Tadpole Thin Client devices of the same model or a defined number of Tadpole Thin Client devices by using the MAC address of the unit or use of the Tadpole parms file. (See Tadpole Parms on page 111.) Note that it is not possible to deploy a complete set of configuration profiles and a single profile file to the same Tadpole Thin Client device. Also, once the "profile" has been uploaded, it also needs to be download individually by name to another Tadpole Thin Client device. In addition, the profile can be secured to prevent further uploads or downloads, preventing transfer of the profile(s) to another firmware server or new profile(s) being deployed on the Tadpole Thin Client device.

Profile Upload /Download Overview

The **Network Profiles** menu contains options for uploading and downloading already configured profiles from the server. See Figure 40.

Figure 40. Network Profile Menu



When a system starts up it will attempt to contact a firmware server (which may be configured either directly or in the menu system, provided via DHCP properties from a server or provided from an entry in the parms file from a server). The system checks to see whether there is a more recent version of the firmware available and attempts to locate a configuration file via TFTP from the firmware server, first from **`<model>.<macaddr>.cfg`** and then if that fails from **`<model>.cfg`**.

The file downloaded can either contain a full configuration set for the Tadpole M1400 or an individual profile. The configuration in the downloaded file will be merged with the current configuration. Any changes in the downloaded file will override those in the running firmware. If the new configuration results in any changes to the active profile, then the Tadpole M1400 will automatically re-start.

Upload a Single Profile to the Server

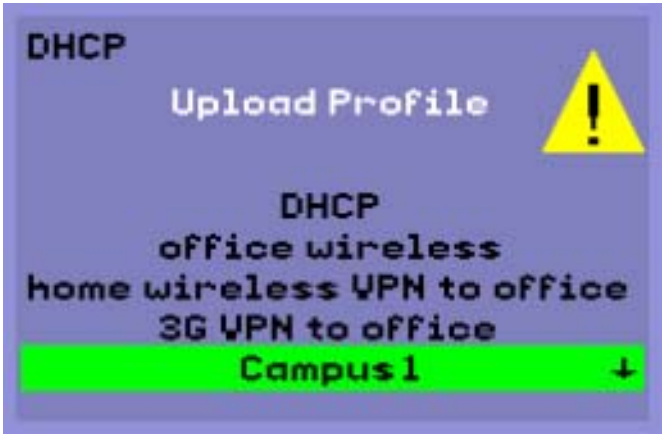
If the profile has been secured for upload with a password, the following steps are required to allow the profile to be uploaded to the firmware server. To upload a single profile to the server, complete the following steps:

1. First create the configuration file name on your firmware server and ensure that it has correct permissions. For example,

```
# cd /tftpboot
# touch Campus1
# chmod 666 Campus1
```

2. Select the **Network Profiles** menu. Page down to the second page and select **Upload to Server** and press enter.

Figure 41. Upload Profile Menu



3. Highlight a profile type from the list to export and press **[Enter]**. See Figure 42.

Figure 42. Export Profile Example

4. To populate the configuration automatically to any new system which is subsequently attached and accesses the firmware server, rename the **`Campus1`** within the **`/tftpboot`** directory to **`Tadpole-mb02.cfg`**:

```
# mv Campus1 Tadpole-mb02.cfg
```

5. Press **[Enter]**; a confirmation message window should appear. See Figure 43. Select **OK**.

Figure 43. Export Profile Confirmation

NOTE: It is advisable to change the permissions on this file to stop any further changes once all the systems have been configured. To ensure no further systems are configured with the profile configuration, move or rename the file. The Download Profile/Profiles menu allows you to import the configuration to each system individually.

Upload All Profiles to the Server

This option uploads the entire configuration set to the server.

To upload the entire profile configuration set to the server, scroll down to **Upload All to Server** from the **Network Profiles** menu and press **[Enter]**. The system will prompt for a filename to save the configuration (defaulting to **`<model>.<macaddr>.cfg`**) via tftp to the firmware server.

Figure 44. Export All Profiles

The system administrator must create this file name or an alternative file name on the firmware server, ensuring that the file name is writable prior to attempting to upload it.

NOTE: To remove the default entry `<model>.<macaddr>.cfg` press [Backspace] to delete one character at a time or press [Ctrl-U] and the entry will be removed ready for a new `<filename>.cfg` to be inserted.

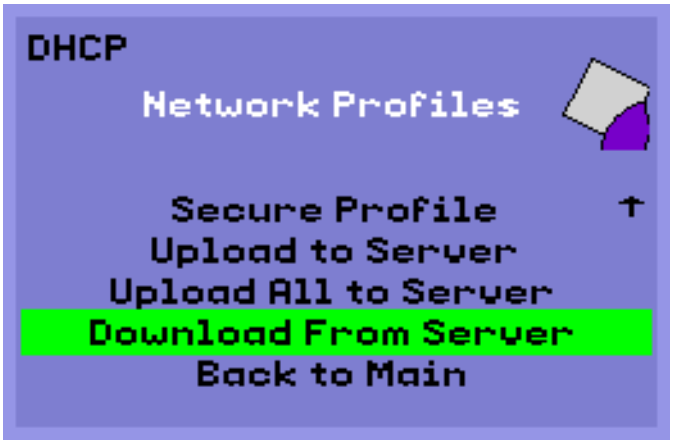
If the Tadpole Thin Client device has a system password set, it will be necessary to enter this password to allow the upload to complete. Should any single profile have a password securing the upload, this will also be required prior to the system password request to allow the upload to complete.

Renaming the file created on the firmware server to **`Tadpole<model>.cfg`** allows the profile to be propagated to any Tadpole Thin Client device of the same model provided the profile is not secured against download.

Download a Profile

1. To import a configuration to the Tadpole M1400. Select **Download from Server** from the **Network Profiles** menu and press **[Enter]**. See Figure 45.

Figure 45. Download from Server



2. Enter the configuration file name present on the firmware server. See Figure 46.

Figure 46. Import Profile Configuration Name

3. After entering the configuration name, a "Profile successfully imported" message window will appear; select **OK**.

NOTE: Note: Renaming the file created on the firmware server to `Tadpole<model>.cfg` allows the profile to be propagated to any new Tadpole thin client device of the same model which is subsequently attaches to the network, provided the profile(s) are not secured against download.

It is possible to target a configuration file to a particular Tadpole Thin Client device by either explicitly creating **`Tadpole<model>.<macaddr>.cfg`** or by creating a **`Tadpole<model>.<macaddr>.parms`** file in which the profile of series of single profiles required for this device are listed, provided the profile is not secured for download. (See Tadpole Parms on page 111 for details of use.) The Tadpole Thin Client device will restart if necessary.

If the profile has a security password set to protect unauthorized download, it will be necessary to enter the password in order to download the profile. The profile must be downloaded using the **Download From Server** from the **Network Profiles** menu as detailed above. The user will be prompted to enter the security password of any profile which has been assigned a security password before the profile(s) are imported to the Tadpole Thin Client device.

NOTE: It is not possible to download both a complete set of profiles and single profiles to a single Tadpole Thin Client device.

An individual profile will either replace the profile with the same name or be added into the first blank profile slot. If it does not match, or if no slots are free, it will be ignored.

Network Access Setup

This section describes how to set up the Tadpole M1400 to access the network via Ethernet, wireless, and broadband.

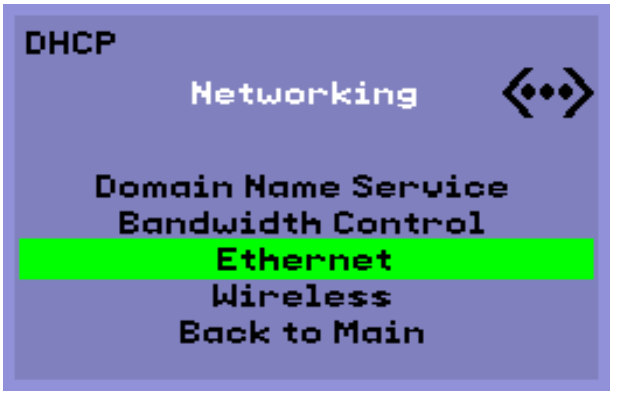
Configuring and Connecting Using Ethernet

Default Ethernet Configuration DHCP

The Tadpole M1400 Thin Client notebook default configuration profile is to connect via DHCP to a Sun Ray server, provided the Ethernet cable is connected. Depending on your Sun Ray server configuration, no further configuration is necessary.

It is possible to reconfigure the first profile (DHCP) or to create your own profile for any given network configuration. The name of the current active profile is displayed in the top left hand corner of the OSD.

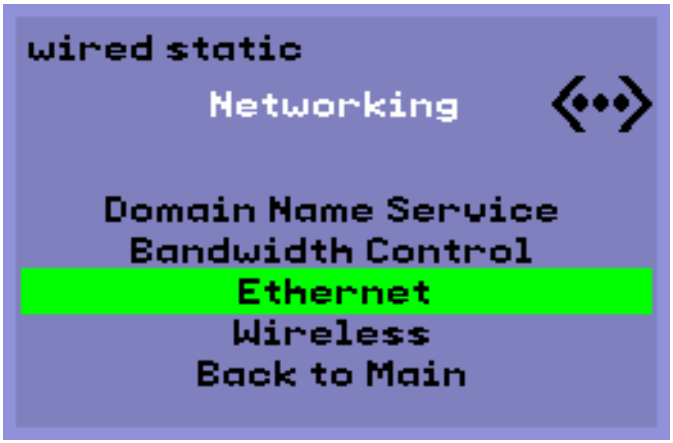
Figure 47. Connected to DHCP Network



Ethernet: Configuring and Connecting a Static IP

1. After selecting the **Networking** option from the **Main Menu**, select **Ethernet** from the Select Interface screen and press **[Enter]**.

Figure 48. Networking Menu

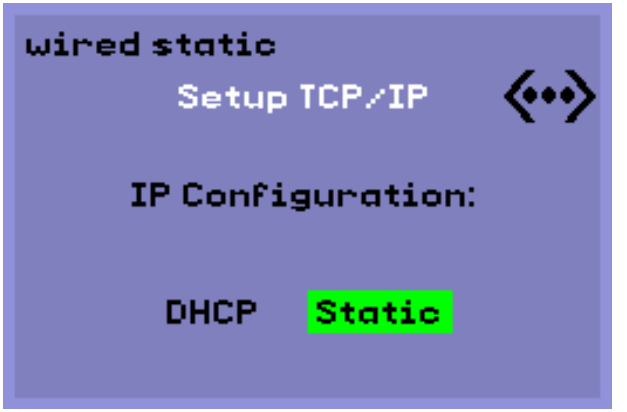


2. Select **None** from the **Ethernet Setup** menu.

Figure 49. Ethernet Setup Menu

3. Under **Setup TCP/IP**, select **Static**.

Figure 50. Setup TCP/IP Screen



4. Enter prompted information into the table:

Static IP Parameters	Comments
Enter IP Address	
Enter Netmask	
Enter Router	(default router IP address)
Enter Broadcast	
Enter MTU	(optional, press enter for default)

5. After entering the appropriate TCP/IP information for your location, select **Yes** or **No** as appropriate in the **Save Changes** screen. If you selected **Yes**, you are given a confirmation screen stating, "Changes saved." Return to the Networking menu by selecting **No Save Changes** screen and **OK** at the **Changes Saved** screen.
6. Exit to the Main Menu via **Back to Main** or by pressing **[Esc]**.

7. If your Sun Ray server configuration does not require you to enter a server or firmware server address, nor a Domain Name Service for the operation, re-initialize the Tadpole M1400 notebook for the changes you have made to take effect. Press **[Menu-A]** to reset and reboot the notebook.
8. Once negotiation between the client and server is complete, you are connected to the server. You will now be presented with either a login screen, a request to insert your smart card, or some other server-dependent startup screen.

Ethernet 802.1X

The Tadpole M1400 supports the following 802.1X extensible authentication protocols (EAP):

- PEAP/MSCHAPv2
- PEAP/GTC
- TLS

802.1X requires a authentication server, such as a radius server, along with an Ethernet switch able to be configured to provide certification to enable access. Configure the radius server and download any certificates required to comply with the appropriate protocols. Should the authentication method use certificates, ensure that the certificates have been downloaded prior to configuring Ethernet 802.1X (see Certificate Management on page 77).

NOTE: MTU (Maximum Transmission Unit). The default setting is 1500 bytes, which is the maximum value. If you are using a VPN other than that included on the Tadpole M1400, you might want to decrease this value to allow space for IPSec headers. (1366 bytes, for example).

Configuring a Server

1. After selecting the **Servers** option at the main menu, you will be prompted for your server IP address or name. You can enter up to 10 server addresses.

Figure 51. Setup Servers Screen (1 of 2)

2. Next you will be prompted for a firmware server address. Enter the address if required, or else press **[Enter]** and leave it blank.

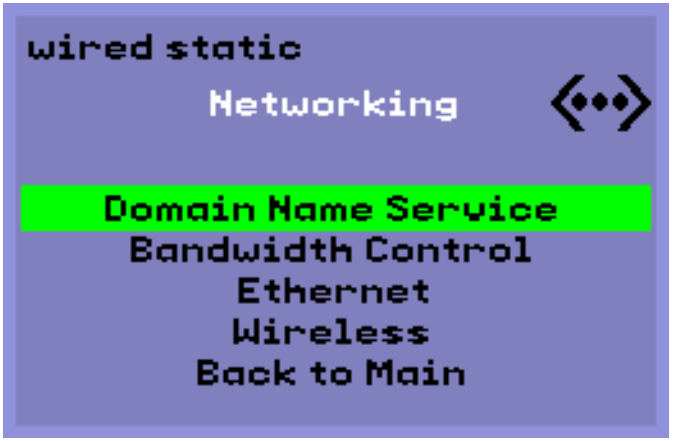
Figure 52. Setup Servers Screen (2 of 2)

3. At the **Save Changes** menu, highlight **Yes** and press **[Enter]**. Press **[Enter]** at the prompt and **OK** to confirm configuration saved.
4. For the changes you have made to take effect, you must re-initialize the Tadpole M1400 notebook. Press **[Menu-A]** to reset/reboot the notebook.
5. Once negotiation between the client and server is complete, you are connected to the server. You may now be presented with either a login screen, a request to enter your smart card, or some other server-dependent startup screen.

Configuring a Domain Name Service

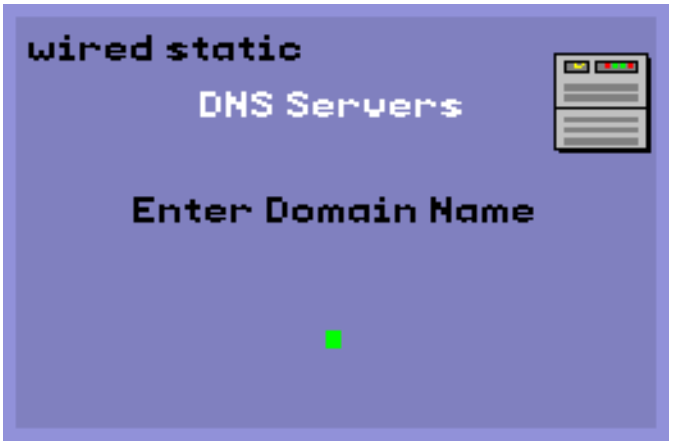
1. Select the **Networking** option at the main menu. Then select **Domain Name Service**.

Figure 53. Networking Menu



2. Enter your DNS Server domain name.

Figure 54. DNS Servers Screen (1 of 2)



3. Next you will be prompted for the IP address of the DNS server.

Figure 55. DNS Servers Screen (2 of 2)

4. At the **Save Changes** menu, highlight **Yes** and press **[Enter]**. Press **[Enter]** again at the prompt and **OK** to confirm changes saved.
5. For the changes you have made to take effect, you must re-initialize the Tadpole M1400 notebook. Press **[Menu-A]** to reset/reboot the notebook.
6. Once negotiation between the client and server is complete, you are connected to the server. You may now be presented with either a login screen, a request to enter your smart card, or some other server-dependent startup screen.

Configuring and Connecting Using Wireless

The Tadpole M1400 has a built-in wireless card to connect to an 802.11x wireless access point or wireless router that is configured for your Sun Ray network.

At the OSD, select **Networking** and then select **Wireless** from the **Networking** menu.

Figure 56. Networking Menu

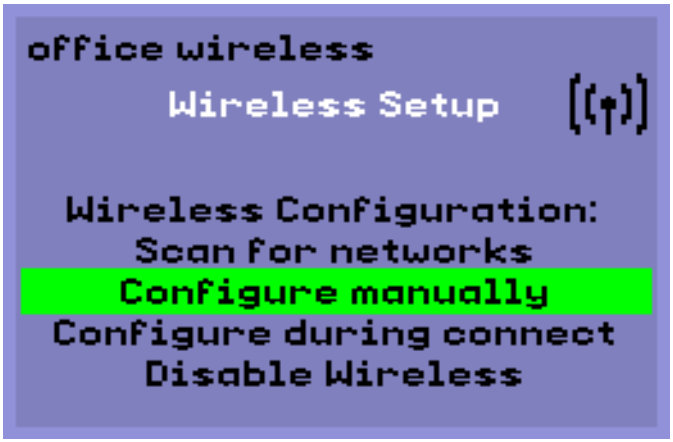
The system can now either scan for local wireless networks or you can configure the wireless manually.

Manual Wireless Configuration

Continue with these steps to configure the wireless manually:

1. Select **Configure Manually** and press **[Enter]**.

Figure 57. Wireless Setup Screen



2. At the **Enter SSID (network name)** prompt, enter the SSID of your wireless network and press **[Enter]**.

3. At the next screen displaying the wireless security mode option, select the appropriate network configuration. The Tadpole M1400 supports the following WLAN security modes: **WEP, WEP/802.1X, WPA-PSK, WPA-PSK2, WPA-EAP,** and **WAP2-EAP**.

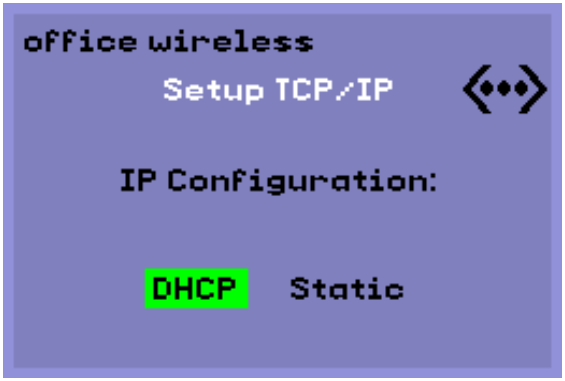
Figure 58. WLAN Security Modes

Select the security mode appropriate to your router and configure accordingly.

NOTE: If you use Certificates for authentication, these should be first added.

4. Next, select the appropriate option to configure the wireless for a DHCP or for a Static IP address.

Figure 59. IP Configuration Screen



5. Enter prompted information into the table:

Static IP Parameters	Comments
Enter IP Address	
Enter Netmask	
Enter Router	(default router IP address)
Enter Broadcast	
Enter MTU	(optional, press enter for default)

6. After entering the appropriate TCP/IP information for your location, select **Yes** or **No** as appropriate in the **Save Changes** screen. If you selected **Yes**, you are given a confirmation screen stating, "Changes saved." Return to the Networking menu by selecting **No Save Changes** screen and **OK** at the **Changes Saved** screen.
7. Exit to the Main Menu via **Back to Main** or by pressing **[Esc]**.

8. If your Sun Ray server configuration does not require you to enter a server or firmware server address, nor a Domain Name Service for the operation, re-initialize the Tadpole M1400 notebook for the changes you have made to take effect. Press **[Menu-A]** to reset and reboot the notebook.

9. Once negotiation between the client and server is complete, you are connected to the server. You may now be presented with either a login screen, a request to insert your smart card, or some other server-dependent startup screen.

NOTE: The quality and reliability of the wireless router/access point plays a major role in the wireless performance of the Tadpole M1400. Older off-the-shelf wireless routers tend to perform less reliably when running graphics-intensive programs via wireless. If you have questions regarding wireless routers, consult your Tadpole M1400 representative.

To allow further configuration of a wireless device, select **Advanced** from the main menu, then select **Wireless Tunables**. See Table 10 below.

Table 10. Wireless Tunables

Wireless Tunable	Description	Specifications
Fragmentation Threshold	Used to adjust the size above which packets sent over the wireless network are broken up. Reducing the threshold can improve performance on noisy networks but in general will degrade performance by increasing overhead.	Range: 256-2346 Default: 2346
RTS/CTS Threshold	Used to adjust the RTS/CTS threshold. This is the minimum packet size for which the wireless driver will perform an RTS/CTS handshake prior to packet transmission (minimum). This increases overhead upon transmission but can improve performance on networks with a large number of active nodes.	Range: 0-2346 Default: 2346
Default Transmit Key	Used to select the default transmit key slot for WEP encryption. May be necessary for some wireless routers.	N/A

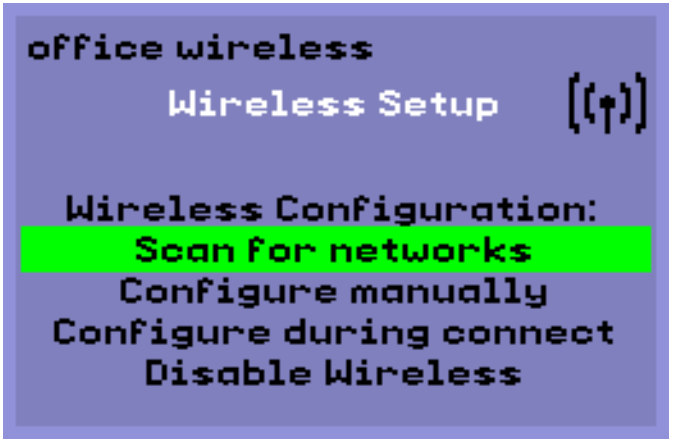
NOTE: Alteration of these options is generally not required for correct operation. They may be used to tune behavior in certain wireless network environments. Be aware that incorrectly setting some of these may degrade performance for particular configurations.

Scan for Networks

As an alternative to configuring the wireless manually, you can scan for networks.

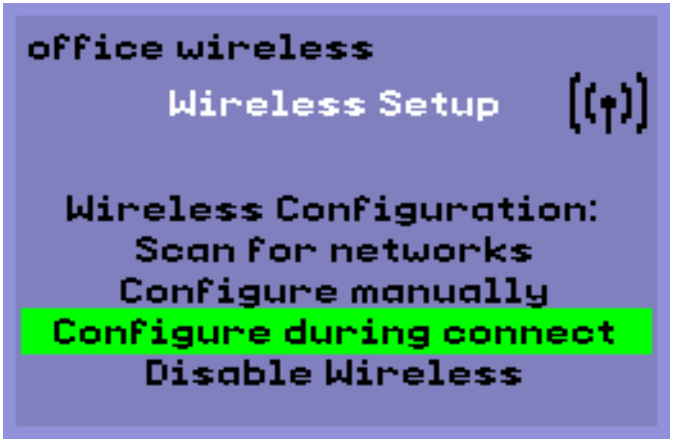
1. Select **Scan for networks** and press **[Enter]**. You will be presented with a list of available networks.

Figure 60. Wireless Setup Screen



Similarly, the **Configure during connect** option allows for the locally available wireless access points to be scanned during the profile initialization phase. The user selects from the list the wireless device for connection, then enters the WLAN security mode and supplies the appropriate authentication for the selected mode.

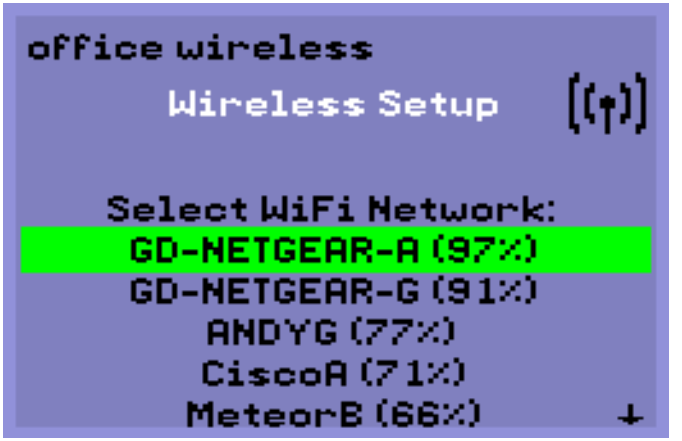
Figure 61. Configure during Connect



Using this option, the user can configure the wireless device for operation when the profile is secured by a system password, which denies access to the majority of the menuing system (see System Password on page 110 for further details).

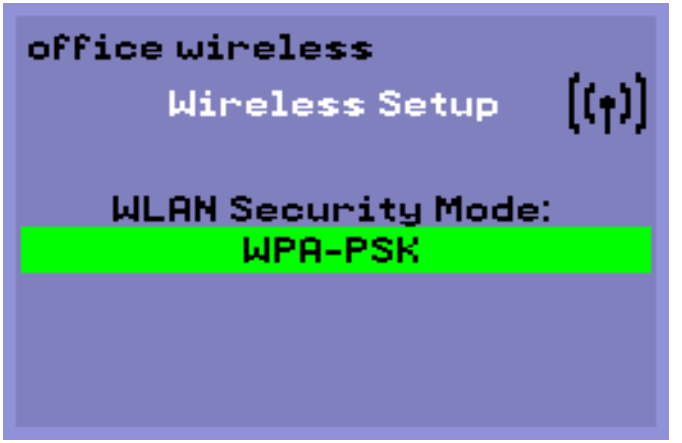
2. Select the desired network and press **[Enter]**.

Figure 62. List of Networks



3. Select the WLAN security mode required and press **[Enter]**.

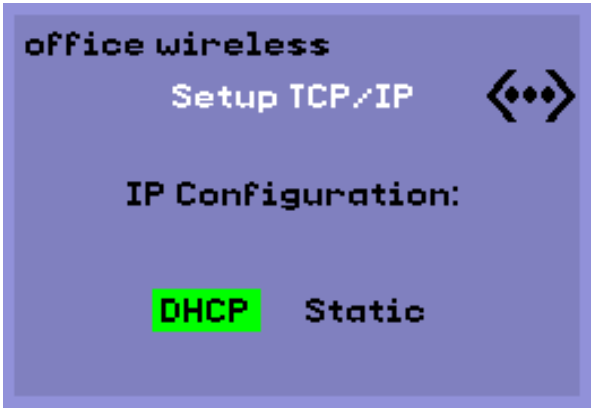
Figure 63. Wireless Setup Security Modes



4. Enter the appropriate authentication for the selected mode.

5. Next, select the appropriate option to configure the wireless for a DHCP or for a Static IP address.

Figure 64. IP Configuration Screen



6. If you select **Static** IP addresses for your Tadpole M1400, you will be prompted for the following information:

Static IP Parameters	Comments
Enter IP Address	
Enter Netmask	
Enter Router	(default router IP address)
Enter Broadcast	
Enter MTU	(optional, press enter for default)

7. After entering the appropriate TCP/IP information for your location, select **Yes** or **No** as appropriate in the **Save Changes** screen. If you selected **Yes**, you are given a confirmation screen stating, "Changes saved." Return to the Networking menu by selecting **No Save Changes** screen and **OK** at the **Changes Saved** screen.
8. Exit to the Main Menu via **Back to Main** or by pressing **[Esc]**.

9. If your Sun Ray server configuration does not require you to enter a server or firmware server address, nor a Domain Name Service for the operation, re-initialize the Tadpole M1400 notebook for the changes you have made to take effect. Press **[Menu-A]** to reset and reboot the notebook.

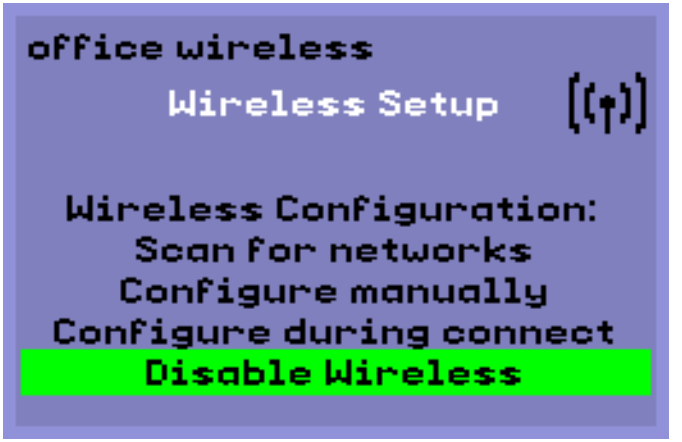
10. Once negotiation between the client and server is complete, you are connected to the server. You may now be presented with either a login screen, a request to insert your smart card, or some other server-dependent startup screen.

NOTE: The quality and reliability of the wireless router/access point plays a major role in the wireless performance of the Tadpole M1400. Older off-the-shelf wireless routers tend to perform less reliably when running graphics-intensive programs via wireless. If you have questions regarding wireless routers, consult your Tadpole M1400 representative.

Disable Wireless

Select **Disable Wireless** and press **[Enter]** to disable the wireless device within the firmware.

Figure 65. Disable Wireless



Certificate Management

The Tadpole M1400 currently supports the use of Certificate Authority Root certificates in order to verify the authenticity of a radius server used during WPA Enterprise and 802.1X (EAP) authentication.

A number of certificates files in PEM format can be stored on the local flash of the Tadpole M1400. To transfer a certificate file to the Tadpole M1400, it must be placed on a web (HTTP or HTTPS) server and then downloaded to the Tadpole M1400 using the **Security -> Certificate Management -> Add CA Root Certificate** option. This will prompt first for the URL to load the certificate PEM file from and then the filename to store it locally to.

Certificates can also be removed from the local store by use of the **Remove CA root certificate** option in the **Certificate** menu.

Once a certificate is loaded on to the Tadpole M1400 it can be selected for verification of a radius server in the wireless and Ethernet 802.1X configuration menus. If no CA root certificate is selected when configuring the wireless or 802.1X devices, then the authenticity of the server will not be verified.

Connecting and Configuring Using Mobile Broadband

NOTE: **Refer to Table 19, "Supported Mobile Broadband 3G Devices," on page 127 for a list of compatible broadband devices.**

1. Power off the unit and insert the mobile broadband device, as shown in Figure 66. The mobile broadband device must be inserted in the Tadpole M1400 for the mobile broadband menu to be displayed and to enable the device to be configured.

Figure 66. Mobile Broadband 3G Card

2. Turn on the Tadpole M1400.
3. Press **[Menu-M]** to access the main-menu.

4. Select **Networking** and press **[Enter]**. Then select Mobile Broadband and press **[Enter]** Select **Yes** and press **[Enter]**.

Figure 67. Networking Menu

5. Select your region and press **[Enter]**.

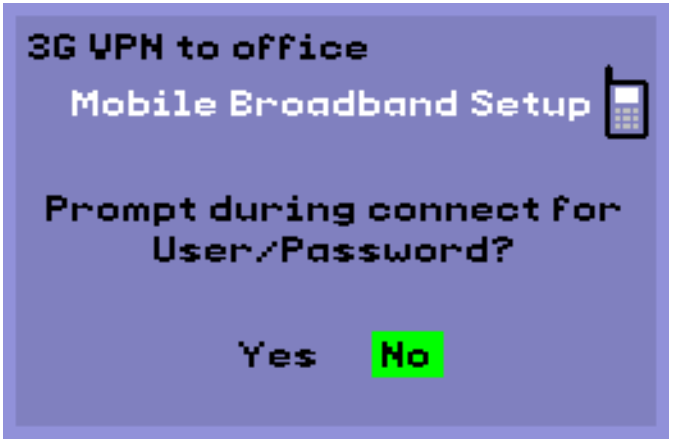
Figure 68. Select Locality Menu

6. Enter your network provider's APN ID if required, or leave blank and press **[Enter]**.

Figure 69. Mobile Broadband Setup Screen (1 of 2)

7. If required, configure to enable the mobile broadband card to prompt for a user name and password when connecting to your network.

Figure 70. Mobile Broadband Setup Screen (2 of 2)



8. Enter MTU value if appropriate or press **[Enter]**.

Figure 71. Enter User Name

9. Press **[Enter]** to save changes and then press **[Enter]** again at the **OK** prompt to confirm configuration saved. Then press **[Esc]** or select **Back to Main** to return to the main menu.

Summary of Network Access Procedures

Accessing, navigating, and configuring via the Tadpole Thin Client menu system is straightforward. The Tadpole M1400 Thin Client menu system contains a variety of variable parameters to enable configuration for a wide range of network configurations and customer driven requirements.

Below you will find an overview of the steps and menu options required to configure the following network options.

Example 1: Ethernet connection to DHCP server

No configuration required, attach the Ethernet cable.

Example 2: Wireless connection to office network

1. Create a profile/edit profile.
2. Configure wireless device.
3. Configure Servers/Domain Name Service.
4. Activate profile.

Example 3: Wireless connection over VPN to office network

1. Create a profile/edit profile.
2. Configure wireless device.
3. Configure Servers/Domain Name Service.
4. Configure VPN.
5. Activate profile.

Example 4: Mobile Broadband connection over VPN to office network

1. Create a profile/edit profile.
2. Configure 3G device.
3. Configure Servers/Domain Name Service.

4. Configure VPN.
5. Activate profile.

Example 5: Wireless connection using the mini browser over VPN to office network

1. Create a profile/edit profile.
2. Configure wireless device.
3. Configure Servers/Domain Name Service.
4. Configure VPN.
5. Enable and initialize the mini-browser.
6. Activate profile.

Example 6: Select from the available wireless access devices

1. Create a profile name (no further configuration necessary).
2. Activate profile.

Provided an Ethernet cable is not attached and the wireless switch is set to the ON position, the Tadpole M!400 will provide a list of the available wireless access points available for selection.

Configuring VPN on the Tadpole M1400

The Tadpole M1400 VPN client can be configured with devices supporting the following IPSEC RFCs.

NOTE: The Tadpole M1400 VPN client does not support SSL VPNs.

Summary of Supported Features

The following is a list of supported features for the Tadpole M1400 VPN client:

- Standards compliant RFCs for encryption and authentication (RFC 2406), key generation and maintenance (RFCs 2407, 2408, 2409, and 4109), dead peer detection (RFC 3706), and connection behind NAT devices (RFCs 3947 and 3948).
- **Internet Protocol Encapsulating Security Payload (IP ESP)** encryption and authentication algorithms ensure confidentiality and integrity of data. Refer to the following IP ESP algorithms:

  Encryption: 3DES, AES 128, AES 192, and AES 256
  Authentication: MD5, SHA-1 and SHA-2

NOTE: Null Encryption can be negotiated alongside one of the authentication algorithms to enable ESP to operate in a mode similar to IP Authentication Header (AH). Encryption and authentication keys are provided as dynamic keys negotiated via IKE.

- **Internet Key Exchange (IKE)**; Identity Protection Mode and Aggressive Mode for Phase 1 negotiations, Quick Mode for Phase 2 negotiations.
- **Perfect Forward Security (PFS)** is provided by a selected Diffie-Hellman group as the source of key material. This ensures that data established by Phase 2 keys is not affected if Phase 1 keys are compromised.

- **Dynamic IP Address Assignment** is supported through **Mode Config**.
- User identification using standard user name/password mechanisms or using **RSA SecurID** authentication.
- **Dead Peer Detection (DPD)** support allows a VPN peer to send messages to the Tadpole M1400 to detect if a connection is still functioning.
- Connection behind a **Network Address Translation (NAT)** device is automatically detected by the VPN client, and is supported with **NAT-Traversal (NAT-T).**

Preparing for Configuration of VPN

Before commencing with any configuration, some preparatory work is required. The following may be needed:

- Tadpole M1400 Thin Client Notebook typically use DHCP to obtain an IP address and to get IP addresses off the Sun Ray Auth and Firmware servers. In VPN configurations, the Sun Ray server information is not likely to be available via DHCP. The server addresses can be configured in the Servers menu.
- Is the Tadpole M1400 likely to be behind a NAT? This is not directly configured but some of the configuration options are affected by this. Specifically, the use of Main Mode and Identification via IP Address are not supported with a NAT router. Aggressive Mode must be configured when behind a NAT.
- Determine which method of identification is to be used--**Key Identifier** or **Email Address**-- and gather the relevant ID values. (For example, when connecting to a Cisco VPN concentrator, the **Key Identifier** will be the group to which you wish to connect.)

- Determine the pre-shared secret relevant to the identifier previously chosen. Currently, pre-shared secret is the only method of authentication that is supported.
- Is the user to be separately verified using XAuth?

NOTE: XAuth is an extension of Mode Config and will be used to further authenticate the user if it is required by the VPN peer.

- Is Aggressive mode to be used during Phase 1? If so, the encryption algorithm, authentication algorithm and PFS (Perfect Forward Security) Group needs to be determined.

Configuring the VPN

1. From the main menu, select **Security** and press **[Enter]**.

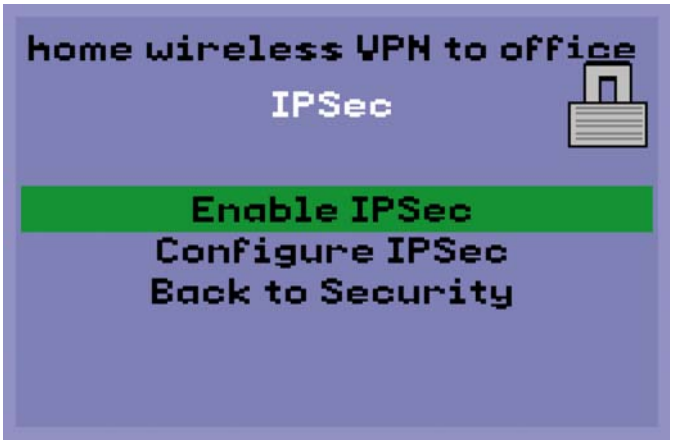
Figure 72. Main Menu

2. Select **IPSec** and press **[Enter]**.

Figure 73. Security Menu

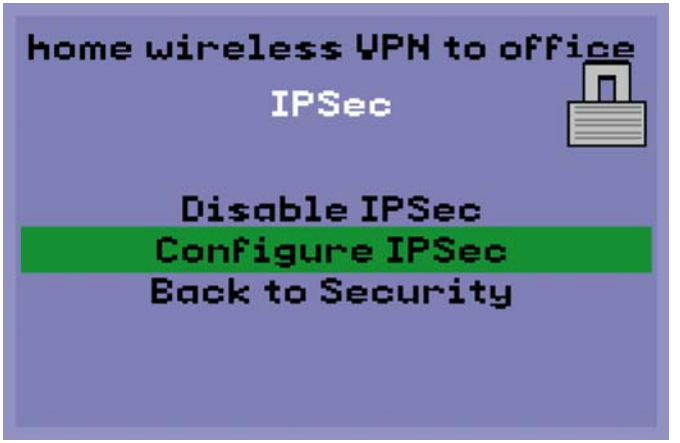
3. Select **Enable IPSec** and press **[Enter]**. Press **[Enter]** again and then **OK**.

Figure 74. IPSec Screen (1 of 2)



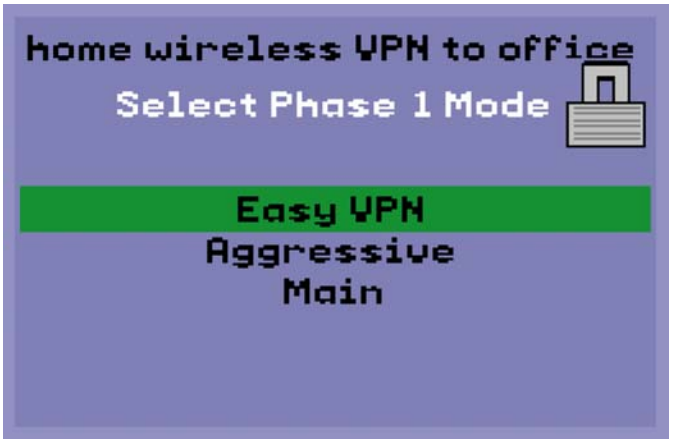
4. Select **Configure IPSec** and press **[Enter]**.

Figure 75. IPSec Screen (2 of 2)



5. Select the Phase 1 mode: **Easy VPN**, **Aggressive**, or **Main**. Phase 1 negotiation determines how the traffic is protected for negotiation of the ESP Security Associations.

Figure 76. Select Phase 1 Mode

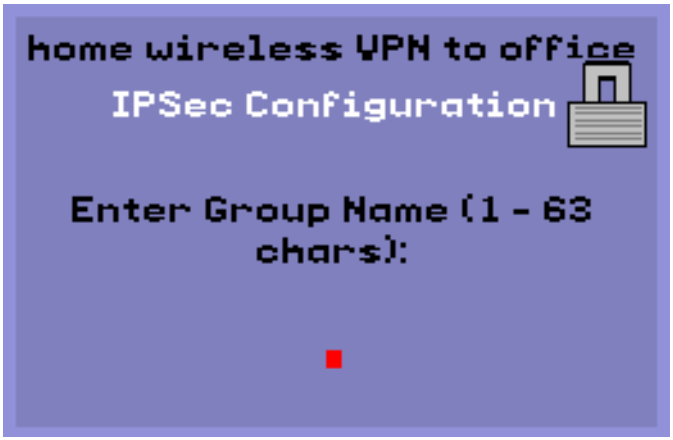


For configuring the VPN in **Easy Mode**, go to Step 6.; for **Aggressive Mode**, go to Step7; for **Main Mode**, go to Step 8.

6. **Easy VPN** is a simplified set of the parameters required by **Aggressive Mode**. For Easy VPN you will only be asked for the following:

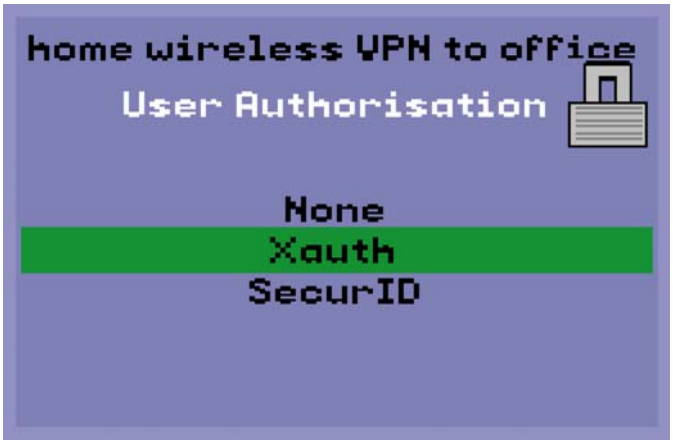
   a. Enter the **Group Name** and press **[Enter]**. Then enter the identifier used to select the pre-shared key in the VPN gateway.

Figure 77. Enter Group Name



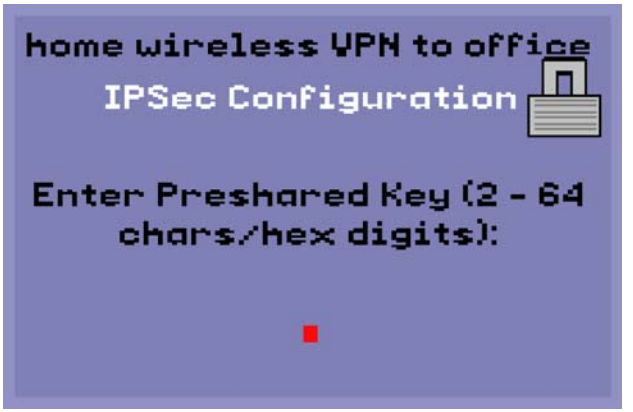
b. Select **User Authorization** mode and press **[Enter]**.

Figure 78. User Authorization Screen



c. Should you select **Xauth** or **SecurID**, enter the pre-shared key and press **[Enter]**.

Figure 79. IPSec Configuration Screen



The Tadpole M1400 currently only supports pre-shared keys as the method for authentication. The pre-shared key entered here must match that on the VPN gateway. The key can be ASCII characters or, by prefixing with **0x**, hex digits. This is the seed to the creation of the dynamic keys. If this does match the gateway, then the Tadpole M1400 will fail to connect to the VPN.

d. Enter the VPN client fixed IP address, or leave blank and press **[Enter]**.

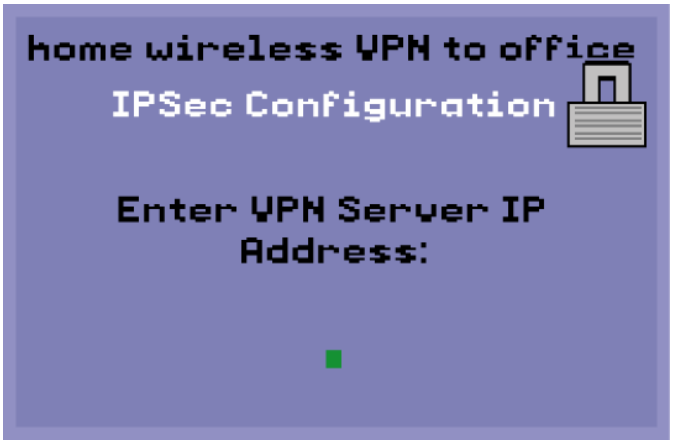
If the Tadpole M1400 has been assigned a fixed IP address within the VPN then enter it here. Leave the address empty to force the Tadpole M1400 to use Mode Config and request an IP address from the VPN gateway.

Figure 80. Enter VPN Client IP Address

e. Enter the VPN Server IP address and press **[Enter]**.

This is the public address of the VPN gateway.

Figure 81. Enter VPN Server IP Address

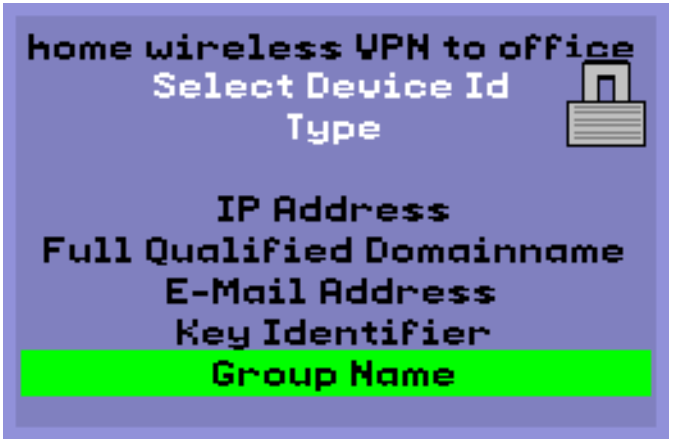


Go to Step 9.

7. In **Aggressive Mode**, knowledge is required of the configuration of the VPN gateway, specifically, which algorithms the gateway is configured to accept. The Tadpole M1400 will send a single proposal with the given algorithms. Aggressive Mode requires more configuration effort but provides more control.

   a. Select the Device ID Type.

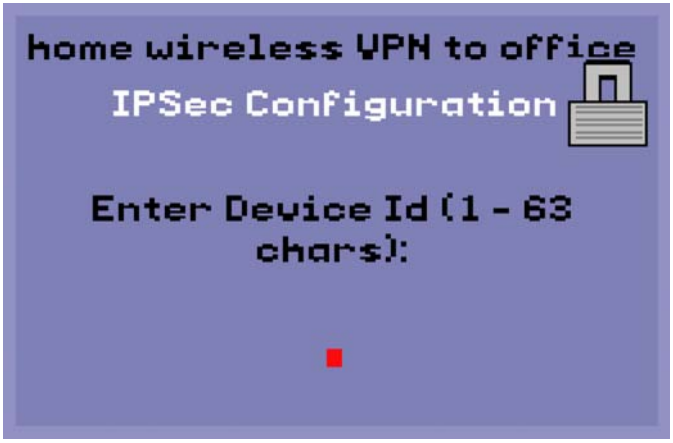
Figure 82. Select Device ID Type



Select one of the five options to determine how the Tadpole M1400 identifies itself to the VPN gateway. The identification is typically used as an identifier to select the pre-shared key in the VPN gateway. The most commonly used identifiers are **IP Address** and **Key Identifier**. If the Tadpole M1400 is behind a NAT device, NAT precludes the use of **IP Address** as an identifier. You will need to use another option and configure your VPN gateway accordingly.

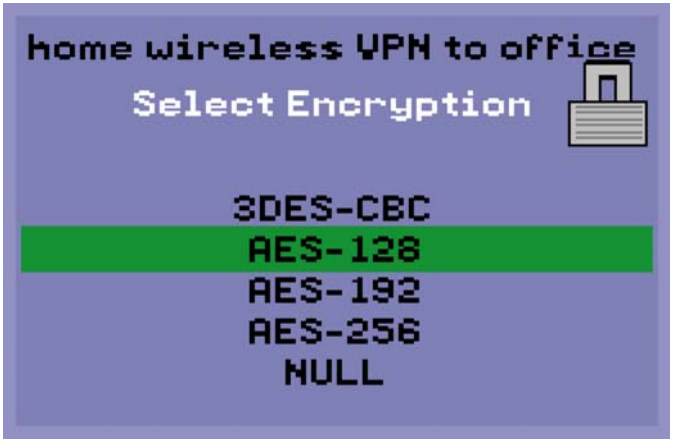
b. For **Key Identifier**, enter the Device ID and press **[Enter]**. Enter the identifier used to select the pre-share key in the VPN gateway.

Figure 83. Enter Device ID



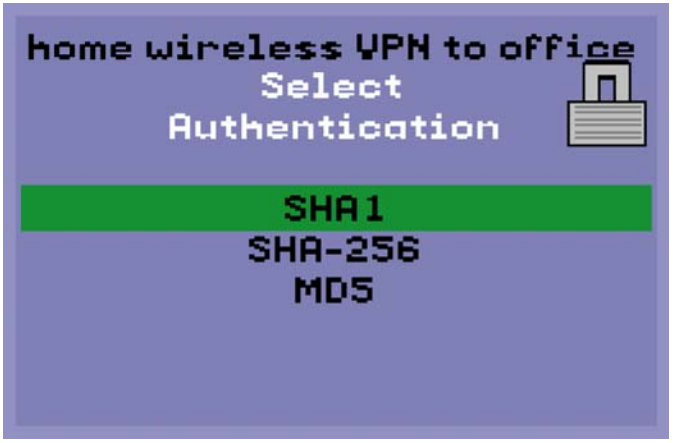
c. Select the encryption algorithm to match your VPN concentrator.

Figure 84. Select Encryption Algorithm



d. Select the authentication algorithm to match your VPN concentrator.

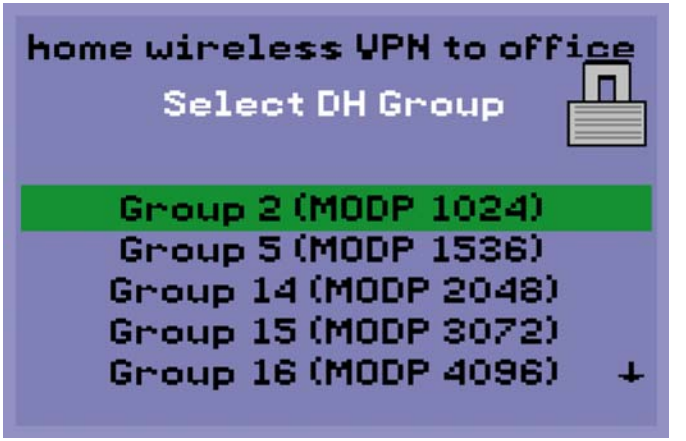
Figure 85. Select Authentication Algorithm



e. Select the DH group appropriate to your VPN gateway configuration and press **[Enter]**.

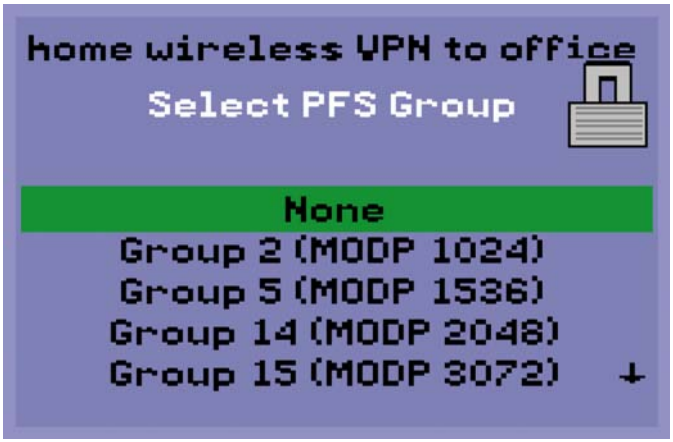
The list comprises the Diffie Hellman groups supported during Phase 1 of the IKE negotiation.

Figure 86. Select DH Group


home wireless VPN to office
Select DH Group
Group 2 (MODP 1024)
Group 5 (MODP 1536)
Group 14 (MODP 2048)
Group 15 (MODP 3072)
Group 16 (MODP 4096)

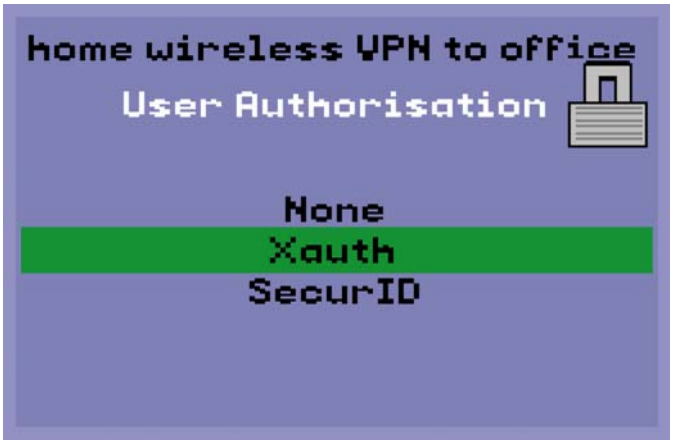
f. Select the PFS group appropriate for your configuration.
The list comprises the Diffie Hellman groups available to use to provide Perfect Forward Secrecy between Phase 1 and Phase 2 key generation in IKE.

Figure 87. Select PFS Group



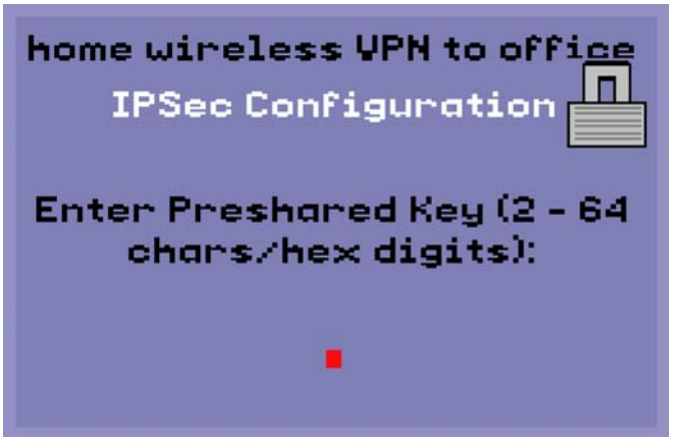
g. Select the User Authorization mode and press **[Enter]**.

Figure 88. Select User Authorization



h. If you select **Xauth** or **SecurID**, enter the pre-shared key and press **[Enter]**.

Figure 89. Enter Pre-Shared Key



The Tadpole M1400 currently only supports pre-shared keys as the method for authentication. The pre-shared key entered here must match that on the VPN gateway. The key can be ASCII characters or, by prefixing with **0x**, hex digits. This is the seed to the creation of the dynamic keys. If this does match the gateway, then the Tadpole M1400 will fail to connect to the VPN.

i. Enter the VPN client fixed IP address, or leave blank and press **[Enter]**.

Figure 90. Enter VPN Client IP Address

If the Tadpole M1400 has been assigned a fixed IP address within the VPN, then enter it here. Leave the address empty to force the Tadpole M1400 to use Mode Config and request an IP address from the VPN gateway.

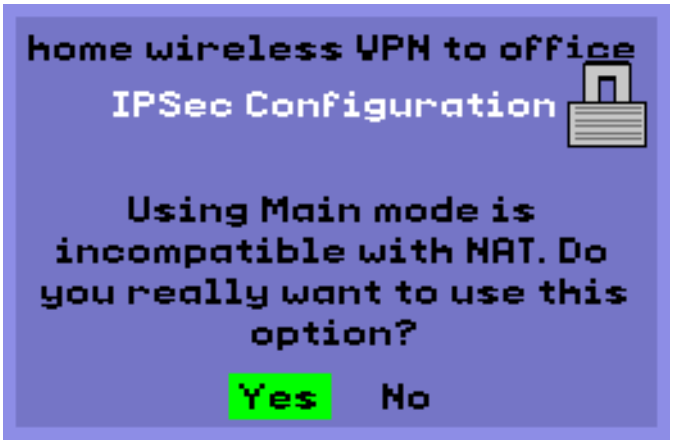
j. Enter the VPN Server IP address and press **[Enter]**.
This is the public address of the VPN gateway.

Figure 91. Enter VPN Server IP Address

Go to Step 9.

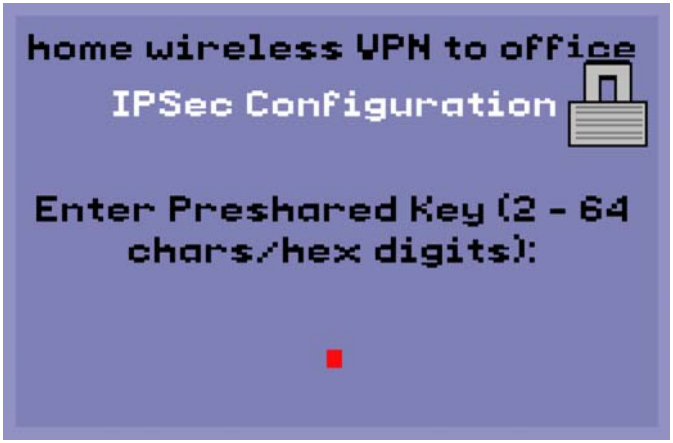
8. In **Main Mode**, the Tadpole M1400 sends a selection of security proposals to the VPN gateway. The gateway will then select the most appropriate. The set of proposals sent includes most permutations of encryption, hash and Diffie-Hellman algorithms supported by the Tadpole M1400 Main and Aggressive modes. Select **Main Mode** and Press **[Enter]** and select **Yes**.

Figure 92. Select Main Mode


home wireless VPN to office
IPSec Configuration
Using Main mode is incompatible with NAT. Do you really want to use this option?
Yes
No

a. Enter the Pre-shared key and press **[Enter]**.

Figure 93. Enter Pre-Shared Key



The Tadpole M1400 currently only supports pre-shared keys as the method for authentication. The pre-shared key entered here must match that on the VPN gateway. The key can be ASCII characters or, by prefixing with **0x**, hex digits. This is the seed to the creation of the dynamic keys. If this does match the gateway, then the Tadpole M1400 will fail to connect to the VPN.

b. Enter the VPN client fixed IP address, or leave blank and press **[Enter]**.

If the Tadpole M1400 has been assigned a fixed IP address within the VPN, then enter it here. Leave the address empty to force the Tadpole M1400 to use Mode Config and request an IP address from the VPN gateway.

Figure 94. Enter VPN Client IP Address

c. Enter the VPN Server IP address and press **[Enter]**.
This is the public address of the VPN gateway.

Figure 95. Enter VPN Server Address

NOTE: Certain configuration options are inherently incompatible with NAT.

When the Tadpole M1400 is behind a NAT device, Main Mode will fail to negotiate keys. If the Tadpole M1400 is behind a NAT or there is any uncertainty select Aggressive Mode.

NAT precludes the use of IP Address as an identifier. You will need to use another option and configure your VPN gateway accordingly.

9. At the "Save Changes" menu highlight **Yes** and press **[Enter]**. Press **[Enter]** to confirm configuration saved.
10. Select **Back to Security** and press **[Enter]**; then choose **Back to Main** and press **[Enter]** to exit the security menu and return to the main menu.

Security Network Login

This feature is provided should your network connection require a permanent SSL authorization to the network. This is achieved via the embedded mini-browser opening the url connection and allowing the user to provide the authentication necessary to establish the connection.

1. To enable, from the **Main Menu** select **Security**, then select **Network Login**. See Figure 96.

Figure 96. Security Menu

2. Enter **Yes** at the **Network Login** screen to enable and enter the network url. i.e

   `http://IPaddress`

   or

   `http://www.mysecurenetwork.com`

   See Figure 97 and Figure 98.

Figure 97. Network Login (1 of 3)

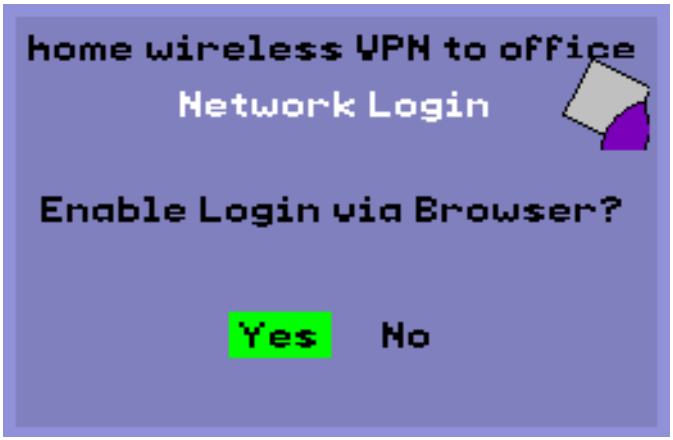
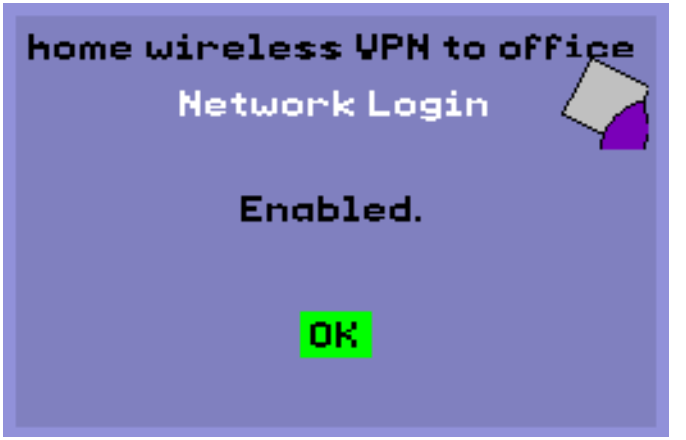


Figure 98. Network Login (2 of 3)

3. Press **[Enter]** to enable. See Figure 99.

Figure 99. Network Login (3 of 3)



The mini-browser will open and connect to the url entered. The user must authenticate as the site requires. This could be via a login screen, a request to insert a smart card, or some other server-dependant startup screen.

If authentication is required prior to the VPN connection being established, once the authorization is complete, continue the connection by pressing the **[Enter]** key with the OSD menu displayed. The browser window will disappear from view (it is hidden) and the Tadpole M1400 will continue to establish the VPN connection. Once the VPN connection and authentication processes are complete, the Tadpole M1400 will connect to the Sun Ray server. Once connected to the server, the user may now be presented with either a login screen, a request to insert a smart card, or some other server-dependant startup screen.

To un-hide/uncover the mini-browser, use the key sequence **[Menu-Ctrl-H]**. Note that the mini-browser will only be able to connect to the original network host established or a server on the same local subnet. If the mini-browser exits the authorization page, the SSL connection will be broken and, depending on your network configuration, the connection is likely to fail.

Configuring the Mini Browser

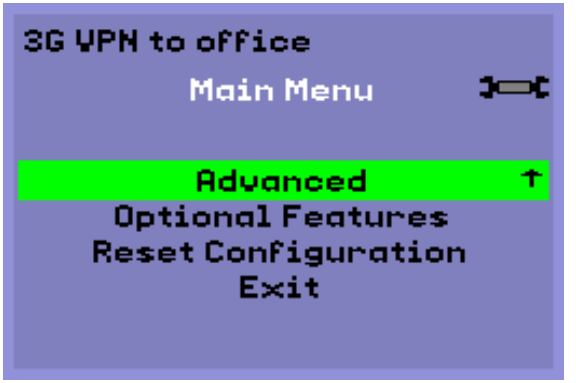
The Tadpole Thin Client has an embedded browser. One function of the browser is that it can be used for a web-redirect from a hotel or public Wi-Fi access point.

NOTE: The browser does not support plug-ins (e.g. flash, video, java).

Enabling the Mini -Browser

1. To enable the mini-browser, go to the OSD **Main Menu** by pressing **[Menu-M]**.
2. Using the down arrow key, scroll down to the **Advanced Menu** and press **[Enter]**.

Figure 100. Main Menu



3. Select **Mini Browser** from the **Advanced Menu** and press **[Enter]**.

Figure 101. Advanced Menu

4. Select **Yes** and press **[Enter]**.

Figure 102. Mini Browser Screen

5. Press **[Esc]** to return to the main menu.

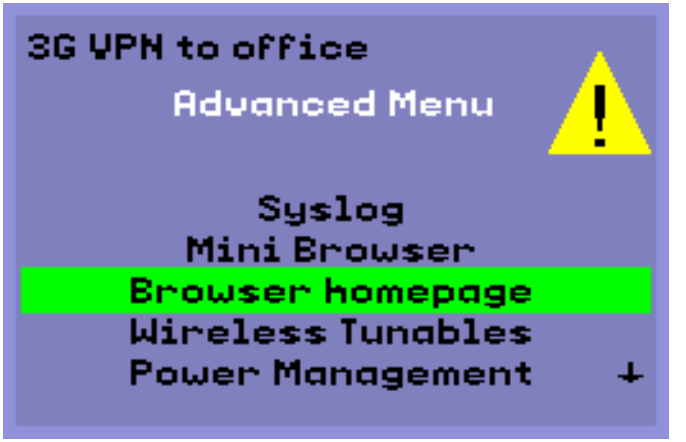
Now configure the mode of connection for the mini browser: ethernet or wireless. (See earlier sections: on page 59 or on page 66.)

Configuring a Homepage

By default the browser's home page is www.tadpole.com. This can be configured to a url of your choice.

1. From the **Main Menu** select **Advanced**, then select **Browser homepage**.

Figure 103. Advanced Menu



2. Enter the desired url and press **[Enter]** to save.

Figure 104. Mini Browser Homepage

Using the Mini Browser

Once the mini-browser has been configured, it can be accessed at any time by pressing **[Menu-B]**. See Figure 105.

NOTE: The browser does not support plug-ins (e.g. flash, video, java).

Figure 105. Mini Browser

The browser will resolve DNS via DHCP. The browser will authenticate to the web-redirect service if necessary.

To access the browser menu toolbar press **[Esc]** and use the arrow keys to navigate the menus. To close the browser, select **File** and **Exit**.

To hide the browser from view using a touchpad or mouse, select **Hide** (located in the top left hand corner). To uncover the hidden the browser, use the key sequence **[Menu-Ctrl-H]**.

To close the browser, from the menu, select **File** and **Quit** or **[Menu-Ctrl-B]**.

System Password

To set a system password, from the main menu **[Menu-M]** select the **Security** menu, then select **Set Password**.

Figure 106.
Set Password

The system password denies access to the majority of the menu system. Access to the **Main Menu** is allowed upon entry of the system password. Access is available to the following Menus via use of the **Menu** shortcuts.

Functionality and configuration without provision of the System Password can be accessed via the following menu keys:

[Menu-A] Soft reset of the client firmware. The system will power cycle and restart.

[Menu-B] Mini-browser (providing it has first been enabled).

[Menu- I] Status menu, displays firmware version, as well as radio status, power status and IPsec status.

[Menu- K] Access to the Keyboard and Mouse menu for configuration.

[Menu-L] View license information.

[Menu-P] List configured profiles and enables selection for use.

[Menu-N] Network information.

[Menu-S] Access to the video settings menu for configuration of the video settings and screen resolution.

[Menu-V] Version of firmware

[Esc] Exits the previous menu.

Should a system password be forgotten or lost contact your nearest Tadpole customer server representative for further instructions on how to reset the system password.

Tadpole Parms

The **`.parms`** file can be used as an alternative method for specifying parameters globally to all Tadpole Thin Clients which connect to the firmware server, or on a per-Tadpole Thin Client basis.

During initialization, the Tadpole Thin Client looks for one of two **`.parms`** files on the tftp (firmware) server which must conform to the following naming convention.

```
Tadpole-mb02.MAC.parms
```

where MAC is uppercase full 14 hex digit mac address of the Tadpole Thin Client as identified using Menu-N, or

```
Tadpole-mb02.parms
```

The Tadpole Thin Client attempts to read the **.parms** file with the MAC address first. Should that fail, it will attempt to read the other **.parms** file.

The contents of the **.parms** file is a set of key-value pairs, of the format:

```
key=value1[,value2,....,valuen]
```

Recognized keys are:

```
servers
select
config
profiles
fwbase
```

Any other keys are ignored, processing of the recognized keys is not effected. The keys **servers** and **select** are compatible with the same options in a SunRay **.parms** file and have the same meaning.

Servers Key

The **servers** key supports up to 11 Auth Servers (aka Session Managers) specified in a list separated by commas. The server names can either be names to be resolved by DNS, or IP addresses. It is permissible for the DNS name to resolve to multiple IP addresses.

Select Key

The **select** key is used in conjunction with the **servers** key. It can have two values either random or in order. It specifies how the list of Auth Servers are processed. A value of **inorder** tells the Tadpole Thin Client device to run through the list sequentially until an Auth Server responds. **random** tells the Tadpole Thin Client device to select an Auth Servers randomly from the serves list.

Config Key

Takes a single value, identifying the name of a saved configuration to be load from the firmware server.

Profiles Key

Provides a comma separated list of individual profiles saved on the firmware server. These are loaded onto the Tadpole Thin Client device from the firmware server.

Fwbase Key

Provides two functions. Provides the url of the firmware server from which the firmware can be downloaded, and, should the url include the firmware version directory path, it also defines the version of the firmware which can be downloaded to the Tadpole Thin Client devices, providing a barrier level.

Tadpole Thin Client Firmware Management

Overview

The Tadpole Thin Client firmware can be downloaded via a tftp server or provided the current firmware release is V3.6.x or greater via a ftp or an http server. For detailed instructions regarding a specific firmware version refer to the release notes.

The firmware is provided as a package for installation in the following formats **`*.tar`** and **`*.rpm`**, to enable installation on Sun Ray server platform running either Sun Solaris or a Sun Ray server supported Linux Operating System.

The firmware package name comprises of the following:

```
TAD<tadpole or Tadpole<Thin_Client_model_name>-
V<version_number>
```

To determine the model name of your Tadpole Thin Client platform, press **[Menu-V]** which displays the OSD firmware version icon. The top line defines the model name. e.g. **`Tadpole-mb02`**.

The latest publicly available firmware package releases can be downloaded from our ftp site ftp://ftp.tadpole.com.

Firmware Management

TFTP

By default a Sun Ray server uses a tftp boot server as a mechanism to update firmware to Thin Client devices. By installing the package, the Tadpole Thin Client firmware will be placed in the **`/opt/TADmeteor/lib/firmware/`** directory and copied into the **`/tftpboot`** directory, and depending on the configuration of your Sun Ray Server, will allow any Tadpole Thin Client device of the same model name to download the firmware located in **`/tftpboot`**.

Should you wish limit or target a given firmware release onto a specific unit this can be achieved by amending the path in which the firmware is installed, in conjunction use of a Tadpole **`.parms`** file using the **`fwbase`** option to define the path of the firmware applicable to the Tadpole model type or a specific unit.

Example:

All Tadpole thin Client devices with the exclusion of the Tadpole unit with MAC address 001B384C6598 should use firmware V3.6.1

Create a default parms file, **`Tadpole-mb02.parms`** located in the **`/tftpboot`** directory with the following entry:

```
fwbase=tftp://192.168.128.1/Tadpole-mb02-3.6.1
```

and create a second parms file **`Tadpole-mb02.001B384C6598.parms`** with the entry:

```
fwbase=tftp://192.168.128.1/invaliddirectoryname
```

No new firmware will be installed on the unit with MAC address 001B384C6598. For further options please refer to the release notes provided with the specific firmware release.

HTTP or FTP

To install using a http or ftp server a Tadpole **`.parms`** file must be defined. The http or ftp server address must be valid i.e configured for use. The advantage of an http or ftp server is that protocols other than tftp can be used, which will substantially decrease the time taken to download the new firmware.

Example of a default parms file **`Tadpole-mb02.parms`**, created with entry:

```
fwbase=http://firmware.myhttpserver.com/
path_to_firmware
```

For further options please refer to the release notes provided with the specific firmware release.

Lock Configuration

Allows the unit to be locked against server updates. The unit will not download new firmware of a new profile image.

This takes precedence of any profile locking method adopted, along with any method employed to control the version of the firmware on the unit

Reset Configuration

Reset configuration removes the profile configurations. It does not remove the video, keyboard or touchpad settings along with behavior of power button or lid switch should these have been configured.

Optional Features

The **Optional Features** menu can be selected from the **Main Menu**.

Reserved for future enhancements. Features are enabled or disabled by insertion of a Tadpole provided key. Currently list VPN.

Notes

Appendix and Licenses

Sun OSD Codes

Sun OSD icon messages and codes are summarized in the following tables.

Table 11. Icon Messages	
Icon Code	**Meaning**
1	Sun Ray unit is starting up and is waiting for ethernet link
11	Server is authenticated by the Sun Ray and the graphic/keyboard network connection is encrypted
12	The Sun Ray cannot authenticate the server but the graphic/ keyboard network connection is still being encrypted
13	Server authenticated to the Sun Ray; network connection between Sun Ray and server not encrypted
14	Server not authenticated to the Sun Ray; graphic/keyboard network connection is not encrypted
15	The Sun Ray is refusing to talk to the server due to the server's refusal or inability to authenticate or encrypt the network connection
16	The Sun Ray USB bus is temporarily busy servicing a high-speed device, and the keyboard or mouse may not be responsive to user input.
21	The Sun Ray unit is booting up and is waiting on DHCP IP address and parameter assignment.
22	The Sun Ray unit is booting up and is now waiting for the initial connection to a Sun Ray server.
23	The connection between the Sun Ray and the network is down. Check the network drop cable and (if the network drop cable is okay) the network switch.
24	The Sun Ray has disconnected from the previous server.
25	The Sun Ray is being redirected to a new server.

Table 11. Icon Messages	
26	The Sun Ray has connected to the server and is waiting for graphics traffic (this is the GNC state).
27	The Sun Ray is broadcasting to locate a Sun Ray server since either it was not provided with Sun Ray specific DHCP parameters or all of the specified servers are not responding.
NOTE: Icon numbers 31 through 34 are the network status display brought up by the user pressing all three audio keys.	
31	The network link is up, the server is authenticated, and graphics/keyboard network connections are not encrypted.
32	The network link is up, the server is not authenticated, and graphics/keyboard network connections are encrypted.
33	The network link is up, the server is authenticated and graphics/keyboard are encrypted.
34	The network link is up, the server is not authenticated and graphics/keyboard are not encrypted.
50	The server is refusing to talk to the Sun Ray due to the Sun Ray's refusal or inability to authenticate or encrypt the network connection

Table 12. DCHP State Codes	
DCHP State Code	**State Meaning**
A	The server is refusing to talk to the Sun Ray due to the Sun Ray's refusal or inability to authenticate or encrypt the network connection
B	DCHP provided IP address, subnet mask, and router, but Sun Ray vendor-specific parameters are missing.
C	DHCP provided IP address and Sun Ray vendor-specific parameters, but subnet mask and router are missing.
D	DHCP provided all expected parameters.

Tadpole OSD Codes

Table 13. Firmware Upgrade OSD Codes	
Code	**Meaning**
2	Start firmware update.
3	Check firmware barrier level.
4	Fetch firmware component.
4	Fetch/Verify failed.
6	Write to flash failed.
7	Installing new firmware.
8	Backup firmware after verification.
9	No firmware update available.
10	Insufficient power for firmware update.

Table 14. VPN OSD Codes	
Code	**Meaning**
40	VPN has been initialized.
41	Internet Key Exchange (IKE) phase 1 is complete.
42	xauth user ID is authenticated.
43	xauth user ID is not authenticated.
44	mode config is complete. Tadpole Thin Client received dynamic IP and DNS information from concentrator.
45	IKE phase 2 is complete (i.e. VPN is up).
46	IKE Phase 1 is complete. Negotiated temporary keys to protect main key exchange.
47	IKE Timeout. No response during key exchange.
48	Dead Peer Detection (DPD) Timeout. Can no longer communicate with the other endpoint.
49	No proposals from concentrator. Mismatched cryptographic algorithms during VPN negotiation.

Table 15. Mobile Broadband OSD Codes	
Code	**Meaning**
50	3G Data card found and being initialized.
51	Checking SIM/PIN status. Ensure the 3G card has a valid SIM and that it's not locked (UMTS only).
52	Configure the 3G card for the correct network type (3G preferred, UMTS only).
53	Registering with cell provider data network.
54	Setting 3G network Access Point Name (APN). (UMTS only).
55	Configuring TCP/IP network with IP address.

Table 16. Wireless OSD Codes	
Code	**Meaning**
60	No encryption on wireless.
61	Starting Wired Equivalence Protocol (WEP) security on wireless connection.
62	Using WEP with 802.1X key management.
63	Using Wi-Fi Protected Access (WPA)/Pre Shared Key (PSK).
64	Using WPA/EAP.
65	WPA process terminated.
66	Disconnect wireless connection.
67	Wireless connected.
68	Wireless scanning for networks.
69	Wireless disabled with RF-Kill

Table 17. EAP (for Wireless or Wired 802.1X) OSDs	
Code	**Meaning**
70	EAP (802.1X) authentication starting.
71	EAP (802.1X) type select phase.
72	EAP succeeded.
73	EAP failed.

Table 18. Ethernet 802.1X OSDs	
Code	**Meaning**
80	Start Ethernet with 802.1X authentication.

3G Compatibility Chart

Table 19. Supported Mobile Broadband 3G Devices				
Provider	**Vendor and Model**	**Card Type**		
		PC	**Express**	**USB**
Verizon	Merlin V640		✓	
	Merlin V740	✓	✓	
	Merlin V620	✓		
	UM 760			✓
	UM175			✓
	USB760			✓
AT & T Cingular	GT Ultra Express		✓	
	GlobeTrotter Express HSUPA		✓	
	GlobeTrotter Express 7.2		✓	
	HSDPA		✓	
	iCON 225			✓
	iCON HSUPA			✓
Sprint	Merlin EX720		✓	
	Curitel Pantech PX 500-Sprint	✓		

Table 19. Supported Mobile Broadband 3G Devices				
Vodafone	Mobile Connect 3G/ GPRS	✓		
	Mobile Connect 3G Broadband	✓		
	Huawei E870		✓	
	Huawei E172			✓
	K3760			✓
	GlobeTrotter Express HSUPA		✓	
	GlobeTrotter Express 7.2		✓	
	HSDPA		✓	
	GlobeTrotter GT MAX 7.2	✓		
	iCON 225			✓
	iCON HSUPA			✓
	K3760			✓
	Merlin XU870D		✓	
Orange	GlobeTrotter Express HSUPA		✓	
	GlobeTrotter Express 7.2		✓	
	HSDPA		✓	
	GlobeTrotter GT MAX 7.2	✓		
	iCON 225			✓
	K3760			✓
T-Mobile	Merlin EX870		✓	

Generic device driver support for 3G devices manufactured by Option, Huawei and Sierra Wireless is incorporated in the V3.6.x or greater firmware release. This does not guarantee operation. The devices listed above have been verified for operation with the Tadpole M1400.

NOTE: Dependant on the implementation by the manufacturer/card supplier, the 3G device fitted with an alternative network provider's data sim may function.

NOTE: For the most up-to-date list of compatible Mobile Broadband 3G devices, see the Tadpole website:

ftp://ftp.tadpole.com/support/Tadpole_M1400/Manuals/3G_devices.pdf

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A library of DPMI-like functions for Linux

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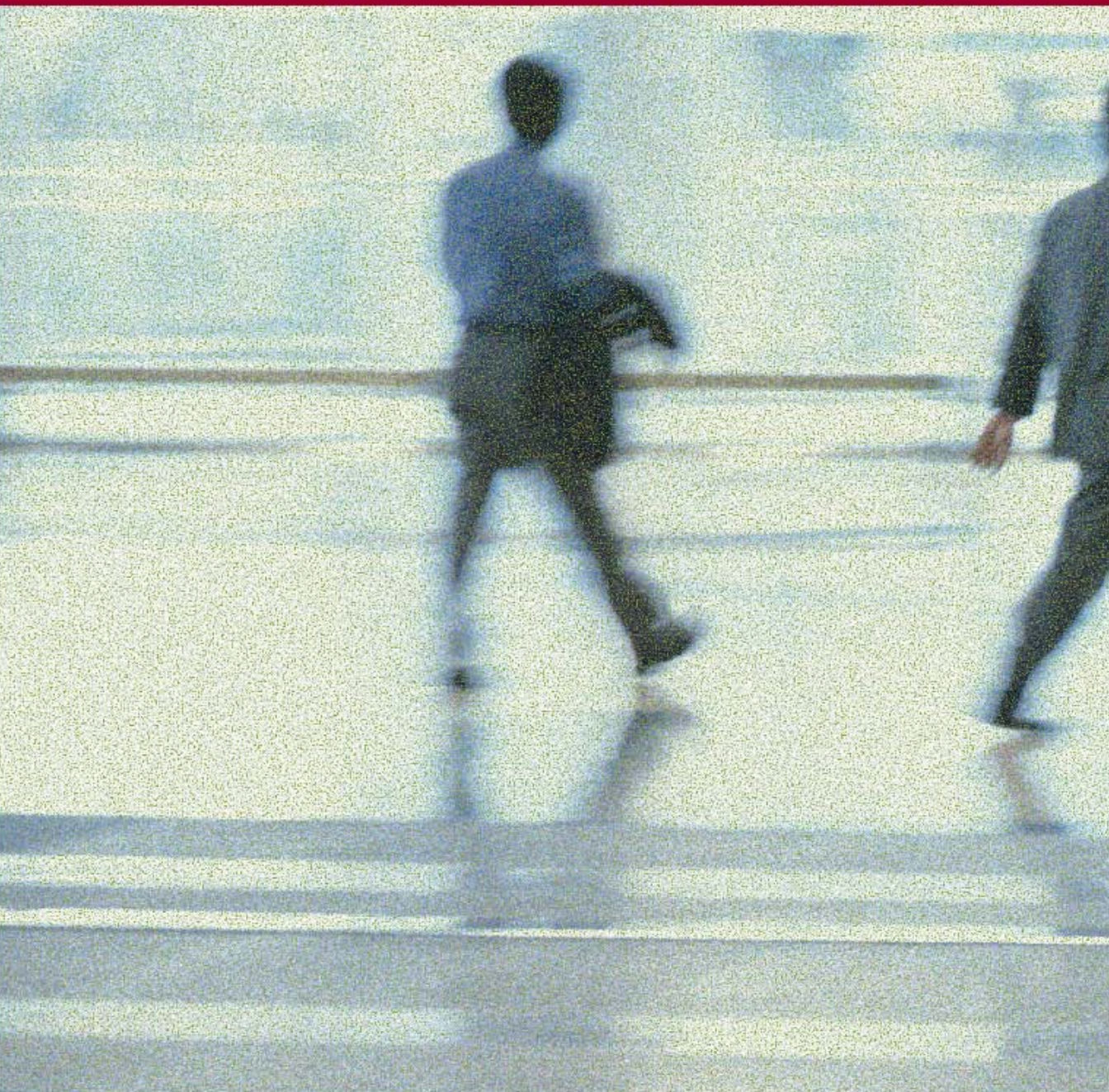
Index

A
AC adapter 4
active profile 58
aggressive mode 88, 92
APN ID 80
ASCII 90
authentication algorithm 94
B
broadcast 60, 69, 75
C
certificate management 77
compatibility, 3G 125
configuration of VPN 85
configure manually 67
configuring a server 62
customer service ii
D
data card 80
Dead Peer Detection (DPD) 85
delete profile 48
DHCP 58, 85
Diffie Hellman groups 94, 95
domain name service 64
dynamic IP address assignment 85
E
easy VPN 88
edit profile 42
encryption algorithm 93
ethernet port 2
F
firmware 13
H
hex digits 90
I
IKE negotiation 94
Internet Key Exchange (IKE) 84
Internet Protocol Encapsulating Security Payload (IP ESP) 84
IP Address 60, 69, 75, 92
IPSec status 13
K
key identifier 85, 92, 93
keyboard combinations 18
M
main mode 88, 98
menu 12, 13
mini browser 13, 109
mobile broadband 78
mobile broadband network 40
mode config. 85
MTU 60, 69, 75, 81
N
NAT 85
NAT-Traversal 85
netmask 60, 69, 75
Network Address Translation (NAT) 85
network profile 41, 43
networking 59
new profile 41
O
OSD 11
P
Perfect Forward Security (PFS) 84
power cord 4
power status 13
profile 40

R
radio status 13
reset 13
restart 13
RFCs 84
router 60, 69, 75
RSA SecurID 85
S
safety vii, ix
SecurID 90
smart card 4, 36, 37
SSID 67
Sun OSD codes 120
Sun OSD icon messages 120
Sun Ray Server 2
T
TCP/IP 60, 69, 75
trademark iii
U
USB ports 2
user authorization 89
V
video settings 13
virtual private network 3
VPN concentrator 93, 94
W
wired network 40
wireless card 2
WLAN security mode 74
X
XAuth 86, 90